TAKING AIM:

The Debate on Zero Inflation

Edited by
Robert C. York

C.D. Howe Institute

C.D. Howe Institute

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Taking Aim

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editor

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Contents

Foreword ..... *vii*

Zero Inflation: Is the Prize Worth the Fight?, by *Robert C. York* 1
Introduction 1
The Zero-Inflation Policy 2
Emerging Support for a Zero-Inflation Target 4
The Zero-Inflation Debate 7
Anti-Inflation Policies in the 1990s 12
Conclusion 15

PART I: The Case for Zero Inflation

The Goal of Price Stability, by *W. Paul Jenkins* 19
Monetary Policy in Action 20
Why Price Stability? 21
Why Live with Inflation? 23
Conclusion 23

The Low-Inflation Consensus, by *Richard G. Lipsey* 25
Would We Want to Maintain a Zero-Inflation Rate If We Had It? 26
Can One Reasonably Advocate a Non-Zero, Long-Term Target? 29
Worries about the Economic Model 31
Broad Support for the Bank's Policy 33

A U.S. Perspective on Zero Inflation, by *W. Lee Hoskins* 34
Price Stability Reduces Uncertainty and Spurs Growth 35

Sound Policy, Credibility, and the Neal Resolution 36
A History of Multiple Goals 37
U.S. Fiscal Policy and Zero Inflation 38
Information and the Current Policy Process 39
Improving the Policy Process 41
Conclusion 42

In Defense of Zero Inflation, by *William T. Gavin* 43
Introduction 43
The Stable-Money Movement 44
Why Is There So Little
Support for Zero-Inflation Policies? 46
The Purpose of Policy Is to
Improve the Standard of Living 53
An Explicit Zero-Inflation Policy 56

PART II: The Costs of Reaching Zero

The Case for Stable, But Not Zero, Inflation, by *Robert F. Lucas* 65
Introduction 65
The Optimal Rate of Inflation 66
The Transition Costs of an Anti-Inflation Policy 68
The Costs of Long-Run Inflation 72
Implications for Current Monetary Policy 77
Conclusion 79

Fighting Inflation: Are the Costs of Getting to Zero Too High?, by *William Scarth* 81
Introduction 81
The Static Excess Burden of the Inflation Tax 83
Calculating the Sacrifice Ratio 86
Inflation, Capital Formation,
and Foreign Indebtedness 92
The Importance of Fiscal Policy and Credibility 97
Conclusions 100

A Comment, by *Peter Howitt* 104
The Cost of Inflation Reduction 104
Sticky Wages and Sticky Prices 105
Persistence in the Natural Rate of Unemployment 106
The Issue of Credibility 107
Efficiency Gains from Inflation Reduction 107

PART III: Two Opposing Views from the Markets

Fallacies and Detriments of a Zero-Inflation Policy, by *Douglas Peters* 111
Introduction 111
The Measurement of Inflation 111
Monetary Theory: What Is Money? 112
Economic Policy Goals: Price Stability *versus* the Others 114
The Costs and Benefits of Price Stability 116
Recent Canadian Economic Policy 117
Conclusion 120

Zero Inflation: A Touchstone of Central Bank Policy, by *John Grant* 121
Price Stability as a Long-Run Goal 121
From the Market's Eye 124
Stay on the Path to Zero Inflation 127

PART IV: An Alternative Monetary Policy

Can the Costs of an Anti-Inflation Policy Be Reduced?, by *Pierre Fortin* 135
The Proposition 135
A Three-Point Evaluative Summary 137
The Costs of Unaided Monetary Restraint Are Sharply Underestimated 141
The Stabilization Policy Mix Must Be Made More Efficient 148

Can Wage and Price De-escalation Be Efficiently Coordinated? 152
We Should Put an End to the Canadian Dollar Roller Coaster 161
Summary and Conclusion 167

Rethinking the Macro Mix: The Case for Provincial Stabilization Policy, by *Thomas J. Courchene* 173
Introduction 173
Financial Integration and Macro Policy 175
Fiscal Policy and Aggregate Savings 185
The Exchange Rate and the Free Trade Agreement 195
Provincial Stabilization Policy 201
The Current Macro Policy Mix 206
Conclusion 218

A Comment, by *Douglas D. Purvis* 223
The Case for Pursuing Price Stability 223
Alternative Models for Monetary Policy 224
Further Comments on Monetary Policy 229

PART V: Workshop Wrap-Up

Rapporteur's Comments, by *David Laidler* 235
Introduction 235
The Benefits of Zero Inflation 236
The Costs of Reducing Inflation 238
The Monetary-Fiscal Policy Mix 241
The Money Supply as a Policy Indicator 243
The Current Stance of Policy 247
Concluding Comment 250

Contributors 253

Workshop Participants 256

Members of the C.D. Howe Institute 259

Foreword

Taking Aim: The Debate on Zero Inflation is the second of two C.D. Howe Institute studies devoted to an in-depth assessment of the Bank of Canada's zero-inflation policy. It is also, however, a critical peer review of the first study, entitled *Zero Inflation: The Goal of Price Stability*, published in early April 1990.

In *Zero Inflation*, the Institute established its position as being in favor of the current stance of Canadian monetary policy. A number of respected economic commentators, however, disagree with the Bank's policy -- in particular, they argue that the costs of achieving a zero-inflation rate may not be worth the benefits. With this in mind, in the interest of intellectual debate, the Institute convened a workshop in March 1990 to discuss the Bank's policy and the positions laid out by the authors of *Zero Inflation*. Participants included monetary policy experts from business and academia, as well as representatives of the central banks of Canada and the United States. In *Taking Aim*, a compilation of the papers presented at the workshop, critics of the Bank's zero-inflation policy state their case.

Robert C. York, a Senior Policy Analyst at the Institute and the editor of *Taking Aim*, organized the workshop on zero inflation and also coordinated the research involved in the earlier study. The book was copy edited and prepared for publication by Barry A. Norris. As with all C.D. Howe Institute publications, the analysis and views presented here are the responsibility of the authors, and do not necessarily reflect the opinions of the Institute's members or Board of Directors.

Thomas E. Kierans
President

Zero Inflation: Is the Prize Worth the Fight?

Robert C. York

Introduction

In the past few years, the Canadian economy has had to operate in the presence of a tight-fisted monetary authority and a debt-ridden fiscal purse. Closely associated with this unbalanced macroeconomic policy environment have been high short-term interest rates and an overvalued currency.

The short-term spread between Canadian and U.S. interest rates has been as much as 5 percent in recent times; since 1985, when it hovered around 72 U.S. cents, the Canadian dollar has risen steadily against the U.S. dollar to its current level above 86 cents. Double-digit interest rates are pushing short-term borrowers to the limit, and the high external value of the dollar has eroded the competitiveness of Canada's export and import-competing sectors. And this is happening at a time when Canadian industry faces fierce competition from increasingly globalized world trade and investment, as well as adjustment problems resulting from the Canada-U.S. Free Trade Agreement.

This is not a sustainable situation. The Canadian economy teeters on the edge of a precipice; real output growth has slowed, and high wage settlements are contributing to the persistence of strong inflationary pressures despite a tight money policy. The inflation rate — as measured by the Consumer Price Index (CPI) — hovers around an annual rate of

5 percent, still a long way from the zero-inflation target pursued by Bank of Canada Governor John Crow since early 1987.

In 1989, the C.D. Howe Institute undertook an evaluation of the Governor's zero-inflation (or stable price) policy, and presented the results in *Zero Inflation: The Goal of Price Stability*, published in early 1990. The Institute's view was that the Bank deserved support for its policy, that the benefits of zero inflation clearly outweighed the costs of getting there. Equally clearly, however, the Bank's goal is the subject of considerable debate among economists and the business community. Accordingly, in March 1990, the Institute organized a workshop at which the findings presented in *Zero Inflation* were debated.

The collection of papers contained in this study is the result of that workshop debate. They provide not only a peer review of *Zero Inflation*, but also the first substantive debate on the issue. In this respect, most of the contributors are necessarily critical of the Bank's pursuit of price stability.

This introductory chapter puts the inflation issue in a policy context by briefly looking at Canada's past inflation performance. It then presents the main arguments in favor of zero inflation, as offered in the first book, in an effort to make this second study self-contained. Following this is a summary of the broad issues surrounding the zero-inflation debate. Not all of the papers in the study will be accessible to non-economists, so this section should help to penetrate the technical arguments and allow for a wider and more informed public discussion on the key issues. Finally, the chapter provides some thoughts on the nature of anti-inflation policies in the 1990s.

The Zero-Inflation Policy

The view of mainstream economists is that inflation is a "social malady." Inflation creates movements in prices that can cause consumers, producers, and investors to make rational but distorted decisions. It affects segments of society in different ways — for example, some can escape rising prices through indexed wage contracts or pensions, while others cannot. It can erode the purchasing power of money very quickly — with a 5 percent rate of inflation, 1,000 dollars is reduced in value to 500 in only 14 years. Nevertheless, mainstream economists disagree about what the appropriate rate of inflation should be, although they agree that it should be low.

The Bank of Canada, under Governor Crow's leadership, is, however, more precise in determining what the socially desirable rate of inflation ought to be. From the Bank's point of view, a positive rate of inflation results in cumulative errors that lead to the misallocation of resources and the distortion of economic decisions. Thus, the Bank argues, price stability — which most observers interpret to be equivalent to zero inflation — is the only acceptable goal of monetary policy, and the only credible policy it can pursue to help sustain strong economic performance.

Canada's Inflation Performance

To set the zero-inflation debate in context, it should be noted that Canada has had a history of low inflation. Indeed, in the 1950s and early 1960s, the inflation rate — as measured by the CPI — was, on balance, close to zero. Since the first oil crisis in 1973, however, the inflation rate has remained above 4 percent; it reached nearly 13 percent in 1981. The United States has had a similar inflation history, with the inflation rate there staying near zero in the 1950s and 1960s, rising to double-digit levels in the early 1980s, and hovering around 4 percent in the latter part of the 1980s.

A couple of important observations follow from this quick look at the data. First, since the early 1970s, inflation has persisted in both Canada and the United States. Anti-inflation policies have been successful in stifling inflationary expectations whenever double-digit levels have been reached, but neither country has been successful in reducing inflation to the levels of the 1950s and 1960s for any sustained period. Inflationary expectations and, hence, the inflation rate, seem to be stuck in the 3–5 percent range. Second, while the two countries have had similar inflation experiences, the U.S. rate has been consistently lower than that in Canada.

Emerging Support for a Zero-Inflation Target

The authors of the C.D. Howe Institute's study, *Zero Inflation*, are primarily concerned with addressing the issue of whether or not a target rate of inflation close to zero is worth aiming for in general terms. They conclude that such a target is indeed both economically feasible and socially desirable. It should be noted, however, that Pierre Fortin carefully analyzes the methods used to measure inflation and finds that there is an upward bias in the published statistics on inflation. He thus makes it abundantly clear that the "zero" of popular rhetoric is a misnomer and should not be taken literally. Accordingly, aiming for "zero" actually means reducing the annual rate of increase of the CPI to the 0–2 percent range and then holding it there.

The Core Model

Money, as the authors of *Zero Inflation* convincingly establish, is the root cause of a sustained inflation. In this, they confirm the mainstream economists' belief that a sustained rise in the price level is, as monetarists are fond of saying, "always and everywhere a monetary phenomenon." In other words, increases in the general price level that are in response to supply-side shocks, or to demand-pull and cost-push factors, cannot be sustained without being validated by the monetary authority.

The analysis in *Zero Inflation* is based on a "core" macroeconomic model and the "core" truths that flow from it. The core model is used to extract the broad consensus that exists amongst economists on the efficacy of monetary policy.[1] The core model leads to the following core truths, which Douglas Purvis outlines in *Zero Inflation*:

- The immediate effects of monetary policy are on financial markets.
- Monetary policy affects the real sector, but only with a lag that can be long and variable (two to five years), and after four or five years has little or no effect.
- In the long term (over five years or more), the effect of monetary policy falls almost exclusively on the price level.
- To lower interest rates in the medium term, the central bank must raise them in the short term.
- The effects of monetary policy depend significantly on expectations in the market and on the central bank's credibility.

Purvis finds that while the core model is consistent with the Bank of Canada's broad intention to pursue price stability, it provides less support for zero as an explicit goal, for two reasons. First, there is nothing in theory to suggest that zero is the optimal inflation rate. Second, the Bank risks losing its hard-won credibility by identifying such a precise target. Rather, it would be better for the Bank to build a consensus to fight creeping inflation and then reduce the underlying inflation rate only gradually to a lower level.

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[1] In the jargon of the economics profession, the core model is more familiarly known as an "expectations-augmented Phillips curve using aggregate demand and supply and IS-LM analysis." The core macroeconomic model has a long-run equilibrium defined by the "normal capacity level of utilization" of the available technology and resources. The unemployment rate at normal capacity is the "natural" rate. Fluctuations of potential income from the natural rate can occur, but not in the long term and not as a result of the influence of stabilization policies.

The Appropriate Inflation Target

Since the core macroeconomic model does not itself identify an optimal rate of inflation, one must be inferred through other means. In *Zero Inflation*, Peter Howitt performs a cost-benefit analysis to determine the preferred rate.

Howitt concludes that, if there were no costs involved in moving from an inflation rate of x to zero, then the choice of target would be simple: aim for a rate of zero. And this would be doing well enough in terms of reducing the costs and distortions created by rising prices — those related to noninflation indexation, the worn shoe leather as more trips to the bank machine are required, imperfect price adjustments, and, most importantly, uncertainty.

If, however, there are costs — in terms of lost output and employment — to moving to zero from where the economy is now, then zero may not be the best rate to aim for at all. The core model suggests that the use of monetary policy to combat inflation will lead to income and employment losses, the extent of which will depend on how hard the monetary authority clamps down. If the monetary brakes are applied hard, inflation could be reduced quickly, but the real economy could also plunge into a prolonged slowdown. Nevertheless, the cost-benefit calculation to determine the economically preferable rate of inflation can also be extended to take account of this consideration. *Zero Inflation* makes its strongest case for a near-zero rate of inflation in this context.

On the one hand, and setting aside hysteresis effects,[2] the redistribution of incomes and employment losses associated with fighting inflation are temporary. On the other hand, the efficiency gains from moving toward an optimal rate of inflation can be permanent. Further, although the costs of fighting inflation may be borne unequally across the country, the gains will be shared by almost everyone.

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[2] Hysteresis effects are concerned with the path-dependence of economic variables — that is, the point to which a variable moves is dependent on the path it takes to get there. For example, a tight monetary policy may cause short-term unemployment. If the period of unemployment lasts long enough, some of the unemployed may become unemployable. Thus, what might seem to be a short-term increase in the unemployment rate may in fact lead to a permanently higher level of unemployment.

Even so, while the authors of *Zero Inflation* support an anti-inflation policy that reduces inflation below its current range, they do not — because of the significant income and employment losses — support aiming for zero as measured by the CPI. But they do argue that gradually getting inflation down to the 0–2 percent range and then holding it there would lead to long-term benefits that far outweigh the short-term costs.

The authors recommend a gradual approach to the 0–2 percent range for two reasons. First, the desirability of aiming for this range rests crucially on hysteresis effects being rather small; this will be more likely to occur if the target is approached slowly over time. Second, the more credibility the Bank of Canada has in pursuing its objective, the more quickly firms will respond to it in their price setting and wage earners in their wage bargaining. The Bank is likely to have more credibility if the policy is pursued as a medium-term strategy.

The Zero-Inflation Debate

The debate about zero inflation is far from settled. There are still technical issues to be resolved (which will not be), and practical problems to be overcome (which may or may not be). The technical aspect of the debate involves disagreements among experts on the actual (and perceived) tradeoffs between lower levels of inflation and higher unemployment, and how these tradeoffs shift over time. The practical but critical aspect of the debate centers around whether the Bank's goal of achieving a zero rate and holding it there is a credible one. The markets currently have little faith in this outcome, as the activities of wage bargainers and wage settlements attest to.

This follow-up study to *Zero Inflation* strives to provide some balance to the debate by presenting alternative objectives for monetary policy. A survey of ideas for alternative goals comes up with a rather short list, however. Monetary policy is, it is true, best suited to fighting inflation. But this should not be confused with other operating frameworks for the monetary authority, such as fixing the exchange rate.

That money plays a basic role in the inflationary process is an important point. Without a general understanding of the relationship between the amount of money circulating in the economy and the level of prices, the debate about monetary policy and price stability would be a nonstarter. Fortunately, there is near-complete consensus among economists on this matter. Indeed, on the specific issue of inflation, a great deal of consensus exists among economists with otherwise quite divergent views.

The Supporters of Zero Inflation

All four papers in Part I and the paper by John Grant in Part II support the Bank of Canada's pursuit of price stability. While this side of the debate is fully articulated in *Zero Inflation*, two comments are worth making about the views of supporters presented in this second volume.

First, William T. Gavin goes much further than either the authors of *Zero Inflation* or the other supporters in this volume in offering a precise prescription of how the central bank can achieve its stated target. Gavin recommends that the central bank be legally required to adopt an explicit target path for the CPI that extends into the indefinite future — in effect, a kind of Gramm-Rudman legislation for monetary policy.[3] He then defines a 6 percent band — a range 3 percent above and below the target path — within which the Bank would be allowed to maneuver, but which would not deflect attention away from the primary goal. Once the target path is chosen, the monetary authority would then reduce the growth rate of the path by 0.5 percent per year until the target rate is achieved. In Gavin's view, such a policy would not cause the dislocations (particularly unemployment) normally associated with anti-inflation policies, but the goal would be reached quickly enough to remain credible.

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[3] Gramm-Rudman legally requires the United States to reduce its fiscal deficit by specific amounts over a well-defined time frame.

Second, while John Grant is a firm supporter of the Bank's policy, he is also skeptical about the likelihood of getting to zero. This is because the financial markets' view of inflation is at odds with that of the Bank. It may be that the markets are wrong and the economy can sustain a zero rate, or perhaps the economists at the Bank know something that the practitioners in the markets do not. Or perhaps there is some other explanation. In any case, Grant argues, the markets and the Bank are not yet on the same inflation track; until they are, he suggests that a zero rate is unlikely to be achieved.

The Critics

The Bank of Canada's critics can be separated into two groups: (1) those who accept the core macroeconomic model used as the basis for analysis in *Zero Inflation*, but who disagree with some of the technical conclusions drawn from it; and (2) those who disagree altogether with the core model as the relevant theoretical construct.

Douglas Peters is the only member of the second group to be represented in this volume. Peters rejects not only the applicability of the mainstream macroeconomic model, but also the value of zero inflation as a socially desirable goal for the central bank to pursue. Thus, he is also skeptical of the presumption that zero would be a good place to be if the economy were already there.

The core model relies on a well-defined notion of the money supply to drive its conclusions about the efficacy of monetary policy. But Peters claims that neither the state nor the central bank can specify what the money supply is in very precise terms. He maintains, therefore, that a macroeconomic theory based on a well-defined money supply is "irrelevant" and that attempts to control inflation by targeting the supply of money are "illusory." He argues, rather, that the money supply is the result of a myriad decisions taken by consumers and producers. It is they who decide what they will offer and accept in exchange for goods and services, and these decisions are complicated by continuing innovations in the financial services sector. Thus, in Peters' view, the model used by the Bank's supporters is wrong, and the Bank would do better to rely on some notion of credit conditions as a policy guideline.

Peters also articulates several concerns that he maintains will act to discredit the Bank's policy objective. In his view, the dogged pursuit of stable prices should not be at the expense of, and is only supplementary to, achieving other more important goals of economic policy — specifically, low unemployment, an equitable distribution of income, and balanced trade with other countries. Furthermore, he provides evidence to suggest that, during the period of stable prices in the 1950s, Canada did not experience the benefits that advocates suggest accrue from price stability. Peters also makes the important point that, unless product and labor markets come to some broad consensus about the desirability of the goal, the costs of going to zero could be substantial.

The other opponents who are included in this volume are among the Bank's mainstream critics, and their disagreements with the analysis and conclusions found in *Zero Inflation* are surprisingly mild. Where deeper disagreement exists, it arises from differing views on the broad balance and thrust of macroeconomic policy in Canada. Three mainstream criticisms can be identified, as follows:

- *Those who support zero inflation are too optimistic in their measurement of its benefits.* Robert Lucas and William Scarth suggest that while the major benefit of zero inflation is supposed to come from a permanent improvement in economic growth rates, the theory and evidence on which this outcome is predicted is rather speculative. Empirical evidence also suggests that while there are, in fact, no large economic efficiency costs associated with a modest inflation rate — say, 4 percent — there are significant costs to implementing an anti-inflation policy.
- *The supporters of zero inflation are too confident that the costs of reducing inflation are only temporary welfare losses.* Recent literature on hysteresis effects — no more speculative than the type of arguments that the supporters rely on — indicates that these costs might be much longer lasting and, in the extreme, permanent. If they are, this changes the cost-benefit calculation dramatically.
- *Even if zero inflation merits support in principle, it does not follow that this is the right time to aim for it.* This view is expressed by Thomas Courchene and Pierre Fortin. They claim that adjustment to the Free Trade Agreement, the likely impact of the goods and services tax, and the current phase of the business cycle all make it particularly costly to move now. Moreover, the fiscal deficit means that aiming for zero by monetary means will induce a dramatic and costly imbalance between monetary and fiscal policy. In the current circumstances, they argue, Canada might do better to live with 4–5 percent inflation and concentrate its political efforts on reducing the deficit.

An Alternative Monetary Policy?

Courchene and Fortin also challenge the use of monetary policy on its own as a weapon with which to battle inflation, and they suggest an alternative monetary framework. Both conclude that the fiscal authorities should play a much greater role in the anti-inflation fight; this would include the involvement of the provincial treasuries, since they could help spread the disinflation effects more equitably across Canada's regions. In the view of Courchene and Fortin, the role of monetary policy is to create an environment in which an escalation of inflation is not of concern — whether this means zero inflation or some higher rate depends on what is most consistent with a balanced macroeconomic regime.

Rather than a zero-inflation policy, Courchene and Fortin would both prefer that Canada have a fixed, or "fat peg", exchange rate with the United States. This would force Canada to accept the U.S. rate of inflation. Canada then would do at least as well on the inflation front as its most important trading partner, which would be a distinct improvement over the past two decades.

Anti-Inflation Policies in the 1990s

The nature of the current debate on anti-inflation policy in Canada is different from previous arguments on this subject. Besides the explicit goal of price stability, the environment in which the target is to be achieved has been altered. This has changed the policy context in important ways. Three developments stand out.

The first is globalization and the introduction of product innovations to the financial markets. This has led to opportunities to exploit global markets and to gain access to global financial resources, but it has also intensified policy harmonization pressures. Monetary authorities operating in internationally exposed economies such as Canada now have little room to manipulate real interest rates and the real exchange rate in the short term, and no influence over these values in the long term.

Consequently, even if the monetary authority were to back off and let the money supply expand, the levels of short-term interest rates may not be all that different than they are now, even though long-term rates may rise. Current high Canadian interest rates are influenced not only by domestic monetary (and fiscal) conditions but also by forces in the international arena, by rising interest rates in Japan, by U.S. inflationary concerns and macroeconomic imbalances in that country, and by the need to provide lenders of financial capital with a competitive rate of return in a world with increasing demands for money. Moreover, to ease off now could lead to even higher rates of interest in the future if measures to contain inflation become unglued.

The second development is the Free Trade Agreement and the opportunity that economic integration with the United States presents for Canada to become a fully world-scale competitor. Adjustment to the Agreement is expected to cause some dislocations for Canadian business; on balance, however, the adjustment will be manageable. Nevertheless, efforts to rationalize production processes to serve an expanded market are in danger of being frustrated by what some observers regard as an untimely attempt to reach zero inflation. Canada went through a divisive debate in deciding to proceed with free trade. If the attempt to reach zero inflation erodes support for the Agreement and leads to a return to the protectionist and nationalistic policies of an earlier time, then the timing of the zero goal could indeed be questionable.

Is it wrong to pursue a tight monetary policy in the first few years of the Agreement? The answer to this question largely depends on two considerations:

- If the current opportunities to rationalize and to expand exports are truly of the once-and-for-all variety, then the permanent costs of foregone investment, lost market shares, delayed productivity benefits, and a temporary loss in competitiveness due to tight monetary policy may be too high a price to pay. If the wrong path is chosen and adjustment is hampered, unemployment and lower incomes may be the result. In this limiting case, there is a strong argument for the monetary authority to ease up.

- If the restructuring can be postponed and markets won at a later time, then the concern becomes one of short-term adjustment costs and temporarily higher unemployment. In this case, the current stance of monetary policy may be appropriate, especially if the costs of operating a different monetary policy — in terms of an inferior inflation performance — are factored in.

The problem with trying to determine the most appropriate monetary policy regime is that no one knows which way the world will evolve. It is unfortunate that the business climate and the current Canadian macro policy mix are so skewed — fiscal policy is essentially no longer countercyclical, and monetary policy is left to fight inflation with no help from the fiscal authority. However, more evidence needs to be presented before the Bank of Canada should be urged to give up the anti-inflation fight or alter its operating framework. Yet, in my view, the uncertainty of the present situation does suggest that the monetary authority should err on the side of gradualism. After all, it would be unfortunate if those who fear that rationalization is being hindered and markets lost by a tight money policy eventually prove to be right.

The third development is the growing body of economic research — both theoretical and empirical — suggesting that economic policy shifts or shocks can have permanent effects, particularly in altering the economy's current industrial structure. If the potential for such large hysteresis effects exists, a zero-inflation policy that keeps interest rates and the exchange rate at high levels may not be beneficial in the long term.

These three developments have important implications for anti-inflation policies in the 1990s and should be kept at the forefront of the debate. Monetary policy measures can have short-term effects on real economic activity — consumer spending, investment, output, and employment — and on asset prices. No other instruments, in the absence of wage-and-price controls, can prevent a sustained rise in prices. The supply of money matters. In this sense, the role of monetary policy is quite narrow. This does not mean, however, that monetary policy should be conducted in a vacuum. Instead, it should operate in a way that is consistent with other economic instruments and objectives, and with a full appreciation of new developments surrounding it. The monetary levers should thus be used in accordance with a medium-term, low-inflation target, and not with respect to short-term disturbances or as a means to stabilize the macroeconomic aggregates.

Conclusion

Attaining zero inflation will be no easy task. Canadians have lived with inflation for quite some time and have come to expect it to continue. It will be difficult for the Bank of Canada to convince Canadians that they really can live without it — particularly since inflationary monetary policies can stimulate economic growth and employment, and hence are politically desirable.

In any case, two key elements are missing from the zero-inflation debate and from any of the Bank's policy statements regarding the zero-inflation goal.

First, the Bank has not yet disclosed its intended time horizon for reaching the target. Will it apply the brakes hard in an attempt to get inflation down in a hurry — say, in two or three years? Or will it take a more gradual approach — say, five or six years — and allow more time for expectations and markets to adjust? To many observers, timing is critical to the policy debate. Monetary control needs to be tight enough to change inflationary expectations, yet loose enough to allow sufficient economic growth so as to not undermine support for the Bank's efforts. In at least the latter case, a broader base of support may begin to build if the Bank were to give some indication of timing.

Second, the Bank has yet to indicate just exactly how it will operate to achieve its target. A rule that specifies the annual rate at which the money supply will be allowed to grow in order to keep inflation at zero is probably not the best way to proceed. Past experience with targeting the money supply was unsuccessful; moreover, innovations in financial institutions and markets make it difficult to measure the money supply. What variables should the Bank target? What variables should market participants focus on to gauge the progress of the anti-inflation fight? The Bank makes much of its articulating a policy goal such as zero inflation to anchor market expectations about the direction of monetary policy. This is both necessary and useful in helping to reduce the volatility of financial aggregates. But what is also surely needed is a clear prescription of how the Bank is conducting its affairs. No such prescription now exists. This is unfortunate, since observers of monetary policy need some marker to find the inflation anchor that the Bank has cast overboard.

Is the prize worth the fight? It is left for the reader of this volume to decide.

Part I

The Case for Zero Inflation

In this first part of the book, supporters of the Bank of Canada's zero-inflation target explain why they think Canadians should endure high interest rates, a high exchange rate, and high unemployment in return for long-term gains from stable prices. The Bank's own view is expressed by Paul Jenkins. Richard G. Lipsey, one of the Bank's strongest supporters, contends that there is a low-inflation consensus among economists. W. Lee Hoskins and William T. Gavin, both of the Federal Reserve Bank of Cleveland, share their views on the anti-inflation fight in the United States.

The Goal of Price Stability

W. Paul Jenkins

The goal of Canadian monetary policy is stability in the general level of prices. This is not a recent change of policy by the Bank of Canada. Governor Louis Rasminsky, in his 1966 Per Jacobsson lecture, stated that "what is needed is not to decide how much inflation can be tolerated but to concentrate on trying to find ways of making the economy work at satisfactory levels without rising price levels."[1] Governor Gerald Bouey, in his 1983 *Annual Report*, wrote that "the proper goal of monetary policy is...monetary stability — stability in prices generally and therefore the value of money."[2] And in his first public address as Governor in 1987, John Crow stated that "the objective to which monetary policy should give central attention is maintaining confidence in the value of money we use in Canada — in other words, the goal of price stability."[3]

The Bank has sought to explain why price stability is so important and why it should be the primary objective of monetary policy. The fullest treatment of this position is found in Governor Crow's 1988 Hanson lecture.[4] It is clear from some of the recent debate, however, that the implications of living with inflation rather than seeking a return to price stability are not well understood. To achieve stability in the general level of prices requires the sustained commitment of the monetary authorities, but it is also crucially important that Canadians understand what this means and how it translates into an improved economic performance.

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[1] Louis Rasminsky, "The Role of the Central Banker Today," Per Jacobsson Foundation, November 9, 1966.

[2] Bank of Canada, *Annual Report 1983* (Ottawa, 1984), p. 6.

[3] John W. Crow, "The Bank of Canada and Its Objectives," *Bank of Canada Review*, April 1987.

[4] John W. Crow, "The Work of Canadian Monetary Policy" (Eric J. Hanson Memorial Lecture delivered at the University of Alberta, Edmonton, January 18, 1988); reprinted in *Bank of Canada Review*, February 1988. See also idem, "Targeting Monetary Policy" (Remarks to the British-North American Committee, Montreal, December 2, 1989); reprinted in *Bank of Canada Review*, December 1989.

The C.D. Howe Institute study, *Zero Inflation: The Goal of Price Stability*, and the Institute's subsequent workshop on this subject are important contributions to furthering discussion and analysis of this public policy issue. At the core of this issue is the question of what monetary policy can credibly achieve and, therefore, what it should aim at, in the national economic interest.

Monetary Policy in Action

Monetary policy is about controlling the rate of monetary expansion. Monetary policy actions are transmitted to the economy through financial-market channels — in particular, through the influence of interest rates and the exchange rate on aggregate demand. The experiences of the 1970s and 1980s have demonstrated only too clearly that, in managing aggregate demand, there are limits on the extent to which policies can boost demand continually. There are no long-run advantages in terms of higher output or employment from policies that attempt to push demand ahead of supply.

For monetary policy, this translates into a choice between a rate of monetary expansion that is consistent with the expanding capability of the economy to produce goods and services — a policy of price stability — and one that is inflationary. In other words, because the long-run effects of monetary policy fall very much on the general level of prices, the choice is in terms of what rate of price change to aim at.

Why Price Stability?

In assessing the benefits of price stability, the distinction is usually made between the effects of anticipated and unanticipated inflation.

Unanticipated inflation carries with it costs that are well recognized. Income and wealth are redistributed arbitrarily from those who are unable to protect themselves from inflation to those who are able to do so. Individuals also engage in less productive activities when protecting themselves or profiting from inflation. Equally important, we live in a "price-tag" economy,[5] where prices perform three roles:

- they transmit information;
- they provide an incentive to users of resources to be guided by this information; and
- they provide an incentive to owners of resources to follow this information.[6]

We also live in a monetary economy where the relative values of inputs (capital and labor) and of outputs (goods and services) are expressed in terms of their money prices. Thus, if the price system is to function efficiently and the economy is to achieve its full potential, monetary policy must preserve the value of money — that is, its purchasing power. Inflation does not make the system work better. Let me try to illustrate this point.

In the 1970s and 1980s, the Canadian economy was subjected to a number of shocks emanating from abroad. For example, Canadians experienced sharp swings in commodity prices — both energy and non-energy. Changes in economic circumstances such as these get reflected in prices, including the exchange rate, and decisions on how resources should be allocated have to be taken by producers and consumers on the basis of judgments as to whether shocks will be temporary or permanent. The evidence suggests that required "real-side" adjustments are only made more difficult by policies that promote inflation — price signals get misread and incorrect decisions get taken. This was certainly the case through the 1970s, when expectations of persistently high and rising inflation became entrenched. This period ended in large dislocations and output losses in 1981–82 when it became clear that these expectations were not going to be realized.

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[5] Arthur M. Okun uses this phrase in his *Prices and Quantities: A Macroeconomic Analysis* (Washington, D.C.: Brookings Institution, 1981).

[6] Milton Friedman, *Price Theory* (Chicago: University of Chicago Press, 1962).

It may be that in certain circumstances output can be raised for a short period of time through inflationary policies that are unanticipated. Such circumstances, however, have become more limited following the inflationary episode of the 1970s and 1980s, because lenders and borrowers are now quick to adapt expectations and attitudes to actions that have inflationary consequences.

After almost 20 years during which inflation averaged nearly 7½ percent, have institutional arrangements adapted to take account of anticipated inflation? The answer is clearly no. Unindexed pensions still predominate. At a 5 percent rate of inflation, individuals on fixed incomes experience a 50 percent reduction in their domestic purchasing power in as little as 14 years. And the tax system has not completely adjusted to inflation either, giving rise to distortions from the interaction of corporate and personal income tax with inflation.

Fundamentally, why have institutional arrangements not adapted? The fact that private contracts are almost always written in nominal terms demonstrates that the costs of adjusting to the risks created by inflation are substantial. This suggests that the best and cheapest form of indexation is one in which prices are stable.

Why Live with Inflation?

The case is often made that if one starts from a position of moderate inflation — say, above price stability but below 10 percent — why not simply sustain that moderate inflation? But what is the rationale for a policy of "living with inflation"?

Why should Canadians accept such a policy, when it clearly involves ongoing costs of resource misallocation, lost productivity, and income redistribution that come with inflation? It must be that those who favor such a policy believe that reducing inflation will involve costs that are not worth incurring relative to the costs of having a chronic, built-in inflationary tendency.

The question then becomes: What is moderate and what is to prevent inflation from ratcheting up in response to adverse shocks if it is considered too costly to bring inflation down in the first place?

The net outcome is a policy with a bias toward increased inflation, one that entrenches the costs of inflation and that lacks credibility. As savers, investors, and consumers catch on to this bias, they become even more pessimistic in their expectations and actions. Thus, the costs of inflation compound under this policy, and it becomes more difficult to hold inflation constant. Indeed, if, at each turn of events, the benefits of lowering inflation seem so remote when weighed against the perceived costs of reducing it, there is a very real risk that the inflation boom-bust cycles of the 1970s and 1980s will be perpetuated. To put it another way, if the costs of higher inflation are judged to be small relative to any short-run benefits from a little more inflation, what is to stop inflation from progressively accelerating over time?

Conclusion

The best contribution that monetary policy can make to sustain good overall economic performance is to provide Canadians with a credible monetary anchor. This is the message the Bank of Canada has been trying to get across. In terms of the Bank's actions, this means aiming at a rate of monetary expansion consistent with stability in the general level of prices.

However, to say that monetary policy directed against inflation is necessary to achieve price stability does not mean that the efficiency of how monetary policy works cannot be improved. Indeed, the success and ease of achieving the goal of price stability will depend importantly on the credibility of monetary policy, as well as on other policies and the developing economic circumstances surrounding these policies. To create the climate of understanding needed to establish and preserve monetary policy credibility, the Bank must be seen as making a commitment to lower inflation now.

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The Low-Inflation Consensus

Richard G. Lipsey

The authors of *Zero Inflation: The Goal of Price Stability* lay out the mainstream economic model that they use to analyze the effects of monetary policy and come to two consensus views:

- if a rate of inflation could be established with no costs of getting there, the best rate would probably be zero; but
- given that the economy has a past history of positive inflation, and given that reducing the inflation rate is costly, the best rate to aim for is some small positive number — a number that is agreed to be less than 4 percent but might well be more than 1 percent.[1]

The authors also agree on some of the key uncertainties in using the mainstream economic model to evaluate an anti-inflation policy, particulary the possibility of "hysteresis", which shows that where the economy ends up may depend on the path it takes to get there.[2] More specifically, a tough anti-inflation policy might raise the natural rate of unemployment, or else cause the loss of some one-time opportunities such as those associated with the Canada-U.S. Free Trade Agreement.[3]

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[1] I refer at all times in this text to the "true" rate of inflation, which, as Pierre Fortin tells us in *Zero Inflation*, might be as much as 1 percentage point below the recorded rate of inflation.

[2] The concept of "hysteresis" is fairly straightforward. It is the notion that short-term adjustments can become permanent — for example, a worker who is unemployed for some length of time might become unemployable because he or she fails to obtain on-the-job experience.

A discussion of the reasons why there are costs both of enduring an ongoing inflation and of reducing it, as well as why there are benefits of a relatively stable price level, can be found in *Zero Inflation*. I shall not repeat them here. All I wish to do by way of introduction to this second study is to add a few points that may help with the discussion of the cases that some of the critics have made in this volume. I will organize my remarks under three main headings:

- Would we really want to hold to a zero-inflation rate even if we were presented with one at no cost?
- Can one consistently advocate an inflation rate other than zero as the long-term goal of monetary policy?
- Can we really rely on the mainstream economic model that all of the authors of *Zero Inflation* use?

Would We Want to Maintain a Zero-Inflation Rate If We Had It?

As it is normally presented, the argument that if we could get to any given inflation rate with no cost we would go for zero appears to depend on analyzing a static economy. To see why, ask another question: If we had a zero-inflation rate, would we want to keep it in the face of the types of shocks that buffet real economies? Maybe we would, but here are two reasons for questioning the apparent self-evident nature of this answer, one from the demand side and one from the supply side of the economy.

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[3] The mainstream model might be described as the union of "old-fashioned" monetarism and neo-Keynesianism. Its textbook version is the aggregate-demand/aggregate-supply model (with the IS-LM model lying behind the aggregate demand curve) combined with an expectations-augmented Phillips curve.

Demand-Side Shocks

The economy is subject to cyclical fluctuations (or, if you prefer, to random, demand-side shocks). There seems to be some substantial evidence that the short-run Phillips curve is nonlinear, with prices rising faster in the face of a given amount of excess aggregate demand than they fall in the face of the same amount of excess aggregate supply.

Now, suppose that the economy cycles symmetrically about its natural rate of unemployment, so that the average rate over the cycle equals the natural rate. The average drift of the price level over the whole cycle will now be upward, with slow reductions in slumps and somewhat faster increases in booms. Next, impose the condition that the price level be constant over the cycle. This means that the average level of unemployment must significantly exceed the natural rate, so that the economy spends most of its time in the zone of excess supply, where prices fall slowly, and much less time in the zone of excess demand, where prices rise more quickly. The conclusions are simple:

- if the Phillips curve is nonlinear, holding any given target rate of inflation over the cycle requires an average rate of unemployment in excess of the natural rate; and
- if, over the range of unemployment in excess of the natural rate, the Phillips curve gets flatter as the mean rate of inflation is reduced, then the lower is the target rate of inflation as an average over the cycle, the more must the average rate of unemployment exceed the natural rate over the cycle.[4]

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[4] More serious concerns then arise if the natural rate of unemployment is itself positively associated with the actual average rate of unemployment achieved over the cycle — a case of hysteresis.

Supply-Side Shocks

Second, the economy is subject to periodic supply-side shocks such as changes in the terms of trade, increases in the prices of domestically produced energy, and the imposition of new indirect taxes. A commitment to a zero-inflation rate on average over several years means that, after such supply-side shocks have raised the price level, the economy must be exposed to a period of depressed activity of sufficiently long duration to drive the price level back to its original level. Provided that these supply-side shocks are not too common, and that they are clearly identifiable as such (as are all the examples given above), many people would prefer to have the Bank of Canada accommodate the shocks, thus accepting a slow upward drift to the price level.

Implications

If there is any quantitative significance in the two effects just mentioned, they might provide reasons for preferring a target of some modest, positive rate — say, 2 percent — rather than zero, which, in a fluctuating economy, would require sustained periods of negative price changes. That I do take these considerations seriously gives me another reason for adding my agreement to the goal of a small, positive rate of inflation (rather than a zero rate), as advocated by the authors of *Zero Inflation*. Unlike the other authors, however, my reasons apply even if the cost of initially establishing a zero rate were negligible.

This recommendation naturally raises the second issue that I wish to discuss. Before doing so, however, it may be worth observing that the above analysis might also be taken to provide support for those who would not have the Bank commit itself to any single target rate (of zero or any other number). In this view, the Bank should commit itself only to maintaining a low rate of inflation, leaving room to say from time to time that the rate should be shifted down a bit further, or that some occasional, one-time, supply-side shock is to be accommodated. (This, however, gets us back to the issue of whether a target that is vaguely stated, or variable, can ever be credible.)

Can One Reasonably Advocate a Non-Zero, Long-Term Target?

The (mild) dissent of the authors of *Zero Inflation* from Governor John Crow's policy of targeting on a zero-inflation rate — as well as the stronger dissent of those who would target on even higher inflation rates — would founder if one of two cases could be made out.

Can a Rationally Calculated Non-Zero Rate Be Constant?

First, it could be argued — as Deputy Governor of the Bank of Canada Charles Friedman did during the course of the discussion at the C.D. Howe Institute workshop on the papers in *Zero Inflation* — that accepting the advice of the authors of that volume would entail a shifting target that varied with the present inflation rate. Specifically, according to this argument, the higher the present rate of inflation, the higher would be the costs of getting to any lower rate and hence the higher would be the agreed target rate.

I think most of us would agree that such an ever-moving target, which varied with the current inflation rate, would be unacceptable for all sorts of reasons. It is imperative for those who would advocate a non-zero rate, therefore, that the method of defining and calculating the desirable inflation target be independent of the current rate of inflation.

Here, by way of illustration, is one possibility. First, assume that there is a certain measurable amount of net social harm associated with any given inflation rate and that the harm is *positively associated* with the current inflation rate. Second, assume that there is a social cost associated with pushing the inflation rate downward by 1 percentage point and that the cost is either constant at all levels of inflation, or is *negatively associated* with the current rate. In this case, the net social benefit of reducing the inflation rate by 1 percentage point can be calculated at each level of inflation, and there will be one unique optimal rate (where the marginal cost of reducing the inflation rate by 1 percentage point just equals the marginal benefits). This value will be independent of the current rate.

Can a Non-Zero Rate Be Credible?

Second, it is often argued that the only credible target for the inflation rate is zero. If the Bank of Canada accepts some positive target — such as a 2 percent inflation rate — the argument goes, what is to stop it from accepting 4 percent, or some higher figure? Somehow, the same observation — if the Bank accepts zero, what is to stop it from accepting 2 percent? — does not seem as strong to these critics.

The response of those who support some non-zero target must be that, if the non-zero target is arrived at openly through transparent calculations that have been exposed to scrutiny and criticism, there is no reason why the number arrived at should be any less credible than the number of zero pulled, as it were, from the air.

Furthermore, if the goal of zero is arrived at not through some rational calculation but just because some gut feeling tells us that zero is credible while 2 percent is not, the whole operation has been made into something of a mystery. Would zero still be credible if, for example, the marginal cost of going from 1 percent inflation to zero were *ten times* as large as the marginal cost of going from 2 percent to 1 percent? These numbers may be unlikely, but they should make us wonder why a number arrived at through gut feeling should be more credible than one arrived at through a rational calculation.

Worries about the Economic Model

Many criticisms of current monetary policy depend on rejecting one aspect or another of the economic model used by all the authors of *Zero Inflation* and, by implication, by the Bank of Canada itself — since none of the Bank's representatives challenged that model during the C.D. Howe Institute's workshop or when *Zero Inflation* was published.

The New-Classical Competing Models

It is worth pointing out in this context that only one competing class of models has any strong support in the academic community. This class comprises the rational-expectations, new-classical-type models in which there is no real place for money. These models come to strong conclusions about the neutrality, and superneutrality of money over virtually all time frames, because they have no integrated place for money as a medium of those exchanges that are taking place in real time.

Since David Laidler argues cogently for the policy irrelevance of models of this type in his summing up to this volume, I will spend no further time on them now — other than to observe that neither the Bank of Canada nor the Department of Finance has found such nonmoney models useful.

The Absence of Another Coherent Competing Model

In any case, these new-classical models will not appeal to those critics of monetary policy who want to dismiss the authors of *Zero Inflation* as "monetarists", and who argue against attempts to control the price level through interest rates and the money supply. To such critics, I want to emphasize that I know of no alternative model that is well articulated and that has any significant empirical support.

In *Zero Inflation*, I urged critics of the Bank's present monetary policy to state their preferred policy alternative. Here, I issue a similar challenge. Those who would dismiss the authors of the previous volume and, by implication, the Bank's economists as "monetarist, neo-Keynesian reactionaries" cannot expect to be taken seriously unless they are willing to outline their alternative model of the economy and to explain the basis of its empirical support.[5]

Doubts about the Details of the Mainstream Economic Model

Many less extreme critics, while generally accepting the mainstream economic model, have doubts about one or another of its important details. The possibility of multiple equilibria and hysteresis effects come into this class of concerns. Let me conclude by adding a doubt of my own.

The prevailing model predicts that there is only one level of economic activity that can be accompanied by a stable rate of inflation — that is the level associated with the natural rate of unemployment (or NAIRU). When unemployment is held below the natural rate, the inflation rate should accelerate; when unemployment is held above the natural rate, inflation should decelerate. Most economists feel reasonably comfortable with the accelerationist part of this hypothesis. But what of the decelerationist part?

For several years in the mid-1980s, Canada's inflation rate seemed stuck on a plateau of about 4 percent, while, it was commonly agreed, unemployment was substantially above the natural rate. Why did the inflation rate not decelerate? This experience once again suggests the old worry of slow downward adjustments combined with rapid upward adjustments — a worry which makes the costs of lowering inflation, and of keeping it there, greater than if the speed of the economy's reactions to high aggregate demand and to low aggregate demand were more symmetrical.

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[5] Although discussion of the papers in this volume at the C.D. Howe Institute workshop did produce a certain amount of anti-"monetarist" mud slinging, I heard not even the semblance of the formulation of a coherent alternative model that would justify such remarks.

Broad Support for the Bank's Policy

In conclusion, let me remind readers of the degree of consensus found among the authors of *Zero Inflation*. We expected broad agreement when we started our work, but we did not anticipate the closeness of our agreement on most matters, including the target rate of inflation.

Our disagreements with the Bank of Canada are mostly second-order ones. By and large, we conclude that approximate price stability is beneficial for the economy, and that the Bank is doing a commendable job of trying to nudge the economy in that direction under very difficult circumstances.

Those of us who have not forgotten the great social cost — in terms of unemployment, human misery, and lost output — of bringing the inflation rate down from its two-digit levels in the early 1980s have reason to be thankful that the Bank has not given into the siren calls for made-in-Canada interest rates or for accepting the primacy of employment over inflation as a policy goal. If it had, it would have found within a year or two that made-in-Canada, low interest rates rapidly would have become made-in-Canada high interest rates, and that employment is always the big loser when an accelerating inflation rate becomes too high for it to be ignored any longer.

A U.S. Perspective on Zero Inflation

W. Lee Hoskins

Policymakers in Canada and the United States have become increasingly aware that a commitment to price stability is the most important contribution monetary policy can make to achieve full employment and maximum sustainable growth. Governor Crow and other Bank of Canada officials have publicly supported the goal of price stability. In the United States, Federal Reserve Chairman Alan Greenspan and the 12 Federal Reserve Bank presidents have publicly supported House Joint Resolution 409, introduced by Congressman Stephen Neal of North Carolina. This resolution would make zero inflation the primary, overriding goal of the Federal Reserve.

In this essay, I would like to discuss the U.S. perspective on zero inflation. Policymakers and businessmen are beginning to recognize that inflationary monetary policies are very costly, and I believe that support for a goal of price stability will continue. Nevertheless, there are signs of complacency in the United States that concern me. Inflation has hovered around 4 percent for most of the current expansion, and has exceeded 4 percent for the past three years. In August 1971, the Nixon administration was so disturbed by an inflation rate of just above 4 percent that it imposed wage and price controls. We should not be complacent about a 4 percent inflation rate. Even a low rate of inflation interferes with economic efficiency and productivity. Only in an environment of price stability can the economy achieve maximum, sustainable growth.

Price Stability Reduces Uncertainty and Spurs Growth

An important benefit of price stability is that it would stabilize the economy and spur growth. High and variable inflation has always been one of the prime causes of financial crises and economic recessions in both the United States and Canada. Every recession in the two countries' recent history has been preceded by an outburst of cost and price pressures and the associated imbalances and distortions. A monetary policy that strives for price stability, or zero inflation, would help markets avoid distortions and imbalances, stabilize the business cycle, and promote the highest sustainable economic growth.

Even fully anticipated inflation can have a profound impact on economic growth. Inflation interacts with the tax structure to stifle incentives to invest. Research at the Federal Reserve Bank of Cleveland indicates that the capital gains tax distortion alone from a steady, fully anticipated 4 percent rate of inflation would result in a present output loss of over US$600 billion. This estimate is much greater than the output loss typically associated with recessions. Moreover, the estimate includes only the loss associated with the failure to index taxes fully on capital income, ignoring the costs to decisionmakers of the uncertainty that inflation causes.

Unfortunately, the costs associated with unanticipated and uncertain inflation can be substantial. Random and unanticipated inflation can disrupt and disturb otherwise prudent and productive investments. The uncertainty created by inflation stifles growth by adding risk to decisions and by retarding long-term investments. Furthermore, inflation causes people to invest scarce resources in activities that are designed to hedge against these adverse price fluctuations. A number of studies have shown that higher inflation or higher uncertainty about inflation is associated with lower real economic growth.

Sound Policy, Credibility, and the Neal Resolution

Through sound economic policies, policymakers seek to minimize this disruptive uncertainty. As long as we live in a world of imperfection, some uncertainty will always exist. But economic policy should not create unnecessary confusion. Sound economic polices must have clear objectives, verifiable outcomes, and rules that are consistently adhered to in order to minimize uncertainty. Predictable, verifiable policies ensure that long-term planning and resource-allocation decisions will be efficient.

Monetary policy can and should be guided by these characteristics of sound policy. Representative Neal's resolution satisfies the key requirements of sound policy: it is clear, it is verifiable, and it has consistent rules. The Neal Resolution would mandate the Federal Reserve to eliminate inflation over five years, and to maintain price stability thereafter.

If policymakers have learned anything over the past 20 years, it is that policy is a dynamic process — that is, that the effect of monetary policy depends greatly on people's expectations of future policy. The commitment to price stability supported by a legislative mandate would increase the credibility of the Federal Reserve. Improving the credibility of the central bank would strengthen the expectation that prices will be stable, contributing to price and wage decisions that would make price stability easier to achieve and maintain.

The Neal Resolution would not only contribute to the Federal Reserve's credibility, but would also enhance its independence from political pressures as it pursues that goal. A commitment by the United States Congress to price stability would reduce the political pressure to deviate from that goal. Thus, a distinction can be made between a central bank that is accountable for long-term performance and one that can be influenced to pursue short-term goals that might be incompatible with desirable long-term economic performance.

A History of Multiple Goals

Why does the Federal Reserve need an explicit declaration of a single goal for monetary policy? Over the years, legislation in the United States has assigned multiple objectives for economic policy. Congress, in the *Employment Act of 1946*, recognized stability and growth of the economy, a high level of employment, stability in the purchasing power in the dollar, and a reasonable balance in transactions with foreign countries as objectives for governmental economic policy. More recently, the *Federal Reserve Reform Act of 1977* amended the *Federal Reserve Act* so that it now requires the Fed "to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates." However, it is the Fed's responsibility to decide how best to pursue those goals.

Until now, the Fed has attempted to balance its congressionally mandated goals of full employment, economic growth, and low long-term interest rates with low rates of inflation. As policymakers have discovered over the past several decades, however, pursuit of multiple policy goals is confusing to markets and disruptive to long-term economic growth.

A more promising approach is to select just one objective, and the only one that the Fed can influence directly — price stability. Under the provisions of the Neal Resolution, the Fed would seek to maintain a stable price level over time. Price stability is defined in the resolution as an inflation rate so small that it does not systematically affect economic decisions. The definition may appear less specific than some would like, but I believe that, by monitoring the decisions of economic agents, it is possible to measure the Fed's success in achieving price stability. In practice, the size of the inflation premium in long-term interest rates, surveys of the public's inflation expectations, and other market-generated measures of inflation expectations can be very useful. If policy is credible, both the inflation component and the inflation-uncertainty risk premium would be eliminated from interest rates.

Enactment of the Neal Resolution would create a situation similar to that of West Germany's central bank. More than one goal is specified by law for the Bundesbank, but West German law states that the goal of price stability is to be given highest priority whenever another goal might conflict. This is the major reason that West Germany's price level doubled between 1950 and 1988, while the U.S. price level quadrupled.

While monetary policy may be capable of influencing the economy in the short term, these effects are only temporary. Ultimately, excessive money growth results in higher rates of inflation and higher interest rates. The rate of inflation affects all dimensions of economic performance, including output, employment, and interest rates. Over time, maximum production and employment along with low interest rates can be achieved only with price stability.

U.S. Fiscal Policy and Zero Inflation

While support for a monetary policy that strives for zero inflation is building in the United States, opponents of the Neal Resolution often argue that particular economic conditions make the pursuit of price stability too costly. For example, it is argued that high U.S. federal budget deficits make a monetary policy of zero inflation impossible. Federal budget deficits should not, however, compromise either the central bank's goal of price stability or the adoption of a specific timetable to achieve it. I do not mean to suggest or imply that current fiscal policy, in either the United States or Canada, is ideal. But it should be recognized that monetary policy cannot offset whatever harm may result from inappropriate fiscal policies; indeed, it can only add to those costs.

In the United States, the argument that large federal budget deficits cause high interest rates — forcing the Federal Reserve to ease monetary policy in order to keep interest rates at levels consistent with full employment — is a familiar one. Even if larger deficits were to put upward pressure on interest rates — and there is little consensus among economists that this is the case — it is far from clear that the Fed can do anything to alleviate the economic consequences. Ultimately, it is real interest rates that affect the consumption and production decisions of individuals and businesses and the allocation of resources over time. Real rates of return are based on the productivity of labor, capital, and society's other real assets, and have very little, if any, connection with monetary policy.

In an inflationary environment, nominal rates of return include an inflation premium to compensate lenders for being repaid in money of reduced purchasing power. The correlation between monetary policy and nominal interest rates that dominates discussion in the financial press tells us next to nothing about the relationship between monetary policy and the real interest rates that govern the allocation of resources over time. Every movement in the central bank discount rate does not produce equivalent changes in real interest rates, in the productivity of the capital stock, or in any of the other important real variables that affect economic activity.

It is both unnecessary and undesirable for sound monetary policy choices to await sound fiscal policy choices. Sound fiscal policy decisions, like sound private economic decisions, require the stable price environment that a commitment to zero inflation would provide. The tax-related distortions and economic complexities associated with even stable, positive rates of inflation argue strongly for price stability.

Information and the Current Policy Process

Critics argue that the Federal Reserve should release more information about monetary policy in a more timely fashion. In the 1950s and 1960s, the Fed provided less information than it does today, but the information that was provided in those years was adequate because price-level stability was the generally expected norm. Moreover, the intentions of policy were more apparent because monetary velocity was thought to be highly predictable, making monetary aggregates more reliable indicators of policy intentions. In the 1970s and early 1980s, the increased uncertainty about monetary velocity — associated with variable inflation and deregulation of the financial services industry — left much doubt about the goals and objectives of monetary policy, giving rise to calls for more information.

Monetary policy information comes in two forms: policy *actions* and policy *intentions*. Discount-rate changes are policy actions; so also might be reserve-requirement changes. Here, however, I wish to restrict my remarks to the most often-used policy tool — open-market operations. The Federal Open Market Committee (FOMC), the Fed's monetary policy-making body, describes these actions as decisions to maintain or change the degree of reserve pressure, a characterization that at present is generally interpreted in terms of its effect on the level of the federal funds rate.

Policy intentions, sometimes called the "policy reaction function," refer to potential future policy actions in response to evolving economic and financial conditions. Knowledge of policy intentions helps rational agents plan and carry out their market activities with minimum losses due to surprises.

Monetary policy intentions are difficult to characterize because the FOMC has discretion in formulating policy within the scope of its multiple objectives. Even though each individual FOMC member may have policy intentions, the FOMC as an official body has not specified either its ultimate objectives or its intended reaction to new information. And, in the context of multiple goals, it is not always clear in advance how the FOMC will respond to new information about the economy, or how quickly or slowly policy should move to correct deviations from those goals.

A rotating committee of 12 people pursuing multiple objectives surely would be expected to have difficulty trying to reach agreement both on a single, unambiguous policy intention and on a policy action consistent with that intention. In effect, FOMC members must agree at each meeting on acceptable current policy, even though they may differ on ultimate policy goals or in the way they would pursue those goals. Reaching agreement on an immediate, explicit policy action at each meeting has been the method by which the 12 members have reconciled their differences in policy goals and methods of implementation until the next meeting.

Improving the Policy Process

A lack of credibility and predictability in the policy process is the problem. More specifically, policy lacks an explicit, attainable objective. Under the current policy process, the relative importance of the various objectives changes with economic fluctuations. To assess accurately past and future decisions, market participants must constantly update their best guess about the central bank's long-term objectives. In the current environment, the market monitors policy actions to detect policymakers' intentions. But the lack of a clearly defined long-term goal makes market expectations of the goal vary with the latest economic news. This uncertainty reflects an economic policy that is neither predictable nor sound.

Some people believe that more information about current policy actions would reduce uncertainty and improve market efficiency. Legislation is under consideration in the United States that would require earlier release of the FOMC's decisions. But, would this reduce uncertainty? I think not. More timely information about open-market decisions cannot substitute for other needed and more important changes in policy procedures.

Economic decisionmakers need more information about the long-term goal of monetary policy, not more information about yesterday's open-market operations. More information about policy actions may help markets to operate more efficiently in the current environment, but the improvements may not be very large and may carry with them the cost of diverting attention from the fundamental information problem. To be fully efficient, markets need to know that the long-term inflation rate will be zero. This requires a monumental change in the current policy process. The Neal Resolution, with its clear focus on price stability, would help bring about this change.

Conclusion

The ultimate goal of monetary policy must be to provide a credible and predictable commitment to price stability — a requirement if a market economy is to perform at its peak. Achieving this goal at the least cost requires that policymakers provide markets with certain basic information that will minimize uncertainty about the commitment and about the time frame within which it is to be accomplished.

If central banks and governments were to commit to an explicit plan for price stability, nations could realize benefits that would be large and permanent. An explicit commitment to zero inflation would be a milestone in modern economic policymaking because it would shift the focus of monetary policy away from short-term fine-tuning to the long term, where it belongs.

In Defense of Zero Inflation*

William T. Gavin

"I shot an error into the air,
it's still going...everywhere."
— Lazarus Long, in Robert Heinlein's *Expanded Universe*

Introduction

The papers in the C.D. Howe Institute's book, *Zero Inflation: The Goal of Price Stability*, support price stability in general, but give only qualified support to the zero-inflation policy adopted by the Bank of Canada. Although many details of the Bank's policy are not clearly specified, I believe that the benefits of switching to a regime of price stability can easily exceed the costs of getting there, especially if the transition is clearly perceived and fully credible.

Zero inflation is a phrase that attracts much attention. Some confusion arises because the operational meaning of the phrase depends on whether authorities are trying to target *ex ante* expectations or the *ex post* realization of inflation. Suppose that, each month, monetary policy were set so that the expected inflation rate was equal to zero. Using this definition, the price level would have no anchor; it would drift about in response to real shocks and control errors because the central bank would not be responsible for reversing past deviations from zero. On the other hand, if policy is conducted to achieve zero inflation (over a given time horizon), then there could be short periods of rising and falling prices, but the inflation rate would average to zero over the long term. Using this definition, the zero-inflation policy is equivalent to a price-level target.

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A zero-inflation policy is a purposeful expansion and contraction of the quantity of money undertaken in order to keep the value of money stable. The idea of the value of money is unique. No single market determines it. Rather, its value is determined by the things it will buy in millions of transactions occurring in many markets. Because the value of money cannot be easily or precisely measured, the central bank has considerable flexibility in conducting monetary policy. The disadvantage of this is that the central bank never knows for certain how a particular policy action will affect the price level.

This uncertainty is also reflected in how the price level is measured. Any particular price index will always contain some variation because of measurement error. As Pierre Fortin clearly explains in *Zero Inflation*, many conceptual and practical problems interfere with the measurement of a true price index. All of the factors affecting supply and demand in a complex market economy cause relative price changes that will induce some error in reported price indexes.

But what does this mean for policy? All measuring devices contain some error. What is relevant is that the measurement error be small relative to economically important changes in the index. Under a zero-inflation policy, people should always expect that what goes up must come down and therefore recognize that variation in the aggregate price level should not matter for economic decisionmaking.

The Stable-Money Movement

Although the idea of a price-level target seems radical today, 60 to 100 years ago the concept was very popular among economists. Historically, economists have always strongly supported a stable monetary standard. Early standards were based on precious metals. The early advocates of stable money supported fixing the value of money in terms of a fixed weight and fineness in the metal that was used to make coins. Later, as foreign trade became more important, many advocates of a stable monetary standard urged fixing money's value relative to a foreign currency that was based on a precious-metal standard.

An important monetary policy issue in the early part of this century was the debate between those who wanted a gold standard and those who believed that changes in the relative price of gold caused financial panics and severe economic fluctuations. In a 1934 classic, Irving Fisher traces the evolution of the idea of a monetary standard based on a price index. Fisher gives an impressive list of economists and legislators from around the world who advocated a monetary system that would stabilize a price index. Drawing just from the 1800s, he describes 28 of their specific proposals.[1]

Economists' support for a monetary system that would stabilize a price index of consumer goods continued to grow during the early 1900s. But despite this widespread support, I could find only one example of a central bank's actually adopting a price-index target as a monetary policy goal.[2] In late

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[1] He describes proposals by John Rooke in 1824, G. Paulett Scrope in 1833, G.R. Porter in 1843, W. Stanley Jevons in 1876, Robert Giffen in 1879, J. Barr Robertson in 1877, Simon Newcomb in 1879, Carlton H. Mills in 1879, Leon Walras in 1885, Alexander Del Mar in 1885, Alfred Marshall in 1887, F.Y. Edgeworth in 1889, Theodor Lawes in 1890, Silvio Gesell in 1891, Aneurin Williams in 1892, Robert Zuckerkandl in 1893, O.J. Frost in 1893, Arthur I. Fonda in 1895, Henry Winn in 1895, Arthur Kitson in 1895, George H. Shibley in 1896, J. Allen Smith in 1896, William A. Whittick in 1896, Dana J. Tinnes in 1896, Ektweed Pomeroy in 1897, Alfred Russel Wallace in 1898, Knut Wicksell in 1898, and Worthy B. Stern in 1898. See Irving Fisher, *Stable Money: A History of the Movement* (London: Adelphi Press, 1934).

[2] For descriptions of this monetary experiment, see ibid.; and Lars Jonung, "Knut Wicksell's Norm of Price Stabilization and Swedish Monetary Policy in the 1930's," *Journal of Monetary Economics* 5 (1979): 459–496.

September of 1931, the Swedish government and the Riksbank left the gold standard and announced that they would use all means available to stabilize the purchasing power of money. They immediately began to collect information to construct a consumer price index (CPI) on a weekly basis. The Riksbank's adherence to the target for the CPI was tempered by its desire to fix the Swedish krona *vis-à-vis* the British pound. Nevertheless, between December 1931 and the end of 1936, the Swedish CPI fluctuated within 3 points of 100.

This example makes clear that targeting the CPI would be a feasible policy, even in a small, open economy. However, this evidence also raises the question of why modern economists have abandoned the goal of a stable monetary standard.

Why Is There So Little Support for Zero-Inflation Policies?

Prior to World War II, there was widespread support among economists for a constant price-level target; however, much of that support has since disappeared. There are at least three plausible explanations why support for zero-inflation policies is now limited.

First, in the postwar environment, relatively stable prices relieved the earlier pressure to adopt a price-level target. The stable-money movement had been driven by the experience of wide price variability under the gold standard. The dollar-gold standard associated with the Bretton Woods agreement seemed to solve one of the major problems with the pre-World War I gold standard. Even though the agreement proved to be unstable, the price experience was not volatile enough to generate widespread interest in monetary reforms until the 1970s, when the monetarist movement picked up the crusade for price stability. Now that people have lost faith in the monetarist policy prescription, there seems to be renewed interest in price-level targeting.

Second, nonmonetary models have dominated the frontier in macroeconomic research for almost two decades.[3] These microfoundation models usually exclude the important reasons for having money. Because the quantity of money does not play an important role, following an inefficient monetary policy does not do much damage in these model economies. To capture an important role for money, there must be some sort of friction affecting trade in decentralized markets.

If one recognizes that the existence of money is inextricably tied to the functioning of market economies, then it is easy to see why disrupting the efficiency of the monetary system can cause great harm. Peter Howitt, in *Zero Inflation*, recognizes this issue and notes that if inflation reduces market efficiency, then one ought to observe a negative correlation between measures of factor productivity and inflation. He cites the evidence presented by Peter Jarrett and Jack Selody that inflationary policies have been associated with significant reductions in productivity growth in the Canadian economy.[4] The welfare implications of this result are overwhelming — so much so that most people are incredulous (note that Howitt gives little weight to this evidence in his final cost-benefit analysis).

The third and, I think, the most important reason why there is so little support for zero inflation is that the conventional macroeconomic model suggests that policymakers must slow real growth and cause unemployment in order to reduce inflation. This framework also suggests that policymakers can stimulate real growth and lower unemployment by raising the inflation rate. Although this paradigm is being challenged by economists at the frontier of macroeconomic research, it is the model familiar to most policy advisors and practicing macroeconomists.

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[3] For a discussion of recent developments in macroeconomics, see William T. Gavin and Mark S. Sniderman, eds., *Recent Developments in Macroeconomics*, a special issue of the *Journal of Money, Credit and Banking*, vol. 20, no. 3, Part II (Columbus: Ohio State University Press, 1988).

[4] Peter J. Jarrett and Jack G. Selody, "The Productivity-Inflation Nexus in Canada, 1963-1979," *Review of Economics and Statistics* 64 (1982): 361-367.

In his essay in *Zero Inflation*, Douglas Purvis describes the monetary policy implications resulting from this standard framework. Because these basic premises are so important to the argument against zero inflation, we should take a closer look at their logical and empirical support. Consider again what Purvis calls "some core truths about monetary policy."

> *Monetary policy has strong effects on the economy: Too much money stimulates the economy and too little restricts it.*

This "core truth" has gained wide acceptance because raw statistical correlations show that money and real output are positively correlated; however, intense debate surrounds this statement in academic circles. The relevant question is whether moderate changes in money growth engineered by a discretionary money-supply policy can enhance real growth.

Statistical evidence is ambiguous because central banks actively accommodate money demand. While policymakers try to follow countercyclical policies, their automatic response is usually to follow the economy upward in an expansion with faster money growth and downward in a recession with slower money growth. This behavior is most easily seen in the way central banks accommodate seasonal fluctuations. An induced response of money growth to economic activity is also a natural result of bureaucratic inertia combined with the use of money-market interest rates as policy guides. By smoothing nominal interest rates, central banks tend automatically to accommodate the demand for money, including the demand induced by changes in economic activity.

To know whether this first "core truth" is well founded in the evidence, money-supply and money-demand shocks must be identifiable; however, no one has successfully sorted out these shocks in the postwar data.

> *The immediate effects of monetary policy are on asset markets — interest rates, exchange rates, and stock prices.*

In each of these cases, there is frequent trading and frequent posting of prices. Yet we know that, even in these markets, there is a form of price stickiness. Consider the New York bond trader who makes a morning deal to buy $50 million in treasury securities at a fixed price. The deal will not be consummated until late in the day. Meanwhile, prices will change. When the bonds are delivered, the transaction will include a wealth transfer due solely to price changes that occurred during the day. How is this wealth transfer any different from the wealth loss a worker suffers when inflation rises unexpectedly after a labor contract has been signed? Just because markets clear only infrequently does not mean that prices are fixed or that new contracts will be made at old prices. The next time the market clears (whether a financial, labor, or goods market), prices should be expected to reflect the effects of the policy change.

> *The effects of monetary policy on real variables such as gross domestic product (GDP) and employment occur with a lag that can be long and variable — the peak effect can often occur after a period of two years or more.*

"Long and variable" means that the relationship is unidentifiable. If one believes that money-supply actions have a positive effect on real output, then one also has to believe that the effect is long and variable, because there is little evidence of a systematic relationship.

> *After an extended period — say, five years or more — the effects of monetary policy fall exclusively on the price level.*

This is certainly conventional wisdom. However, there are some good reasons to think that a credible change in monetary policy would affect prices much more quickly — and, therefore, have less effect on output. Studies by Irving Fisher in the early part of this century indicated that the lag from money to prices was less than three months.

> It was in August, 1915, that the quantity of money in the United States began its rapid increase. One month later prices began to shoot upward, keeping almost exact pace with the quantity of money. In February, 1916, money suddenly stopped increasing, and two-and-a-half months later prices stopped likewise. Similar striking correspondences have continued to occur with an average lag between the money cause and the price effect of about one-and-three-quarters months.[5]

Fisher's description of a short lag was apparently only one of many by contemporary observers. A recent econometric study using data from 1894 to 1909 confirms Fisher's conclusion about the length of the lag:

> Event analysis of panic episodes, ARMA [autoregressive moving average] representations of gold flows, and macroeconomic simulation models of international adjustment using monthly data all indicate that adjustment to transaction-balance shocks was essentially complete within three months.... Our results confirm the responsiveness of prices in the short run. In particular, prices did not lag related movements in output.[6]

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[5] Irving Fisher, *Stabilizing the Dollar in Purchasing Power* (New York: E.P. Dutton, 1918), p. 5.

[6] Charles W. Calomiris and R. Glenn Hubbard, "Price Flexibility, Credit Availability, and Economic Fluctuations: Evidence from the United States, 1894–1909," *Quarterly Journal of Economics* 104 (1989): 430–431.

Although this evidence pertains to century-old data, there is no reason to think that markets are less efficient today. On the contrary, advances in information and communication technologies suggest that the relevant lags are now even shorter. I think that a long lag is measured incorrectly today for at least two reasons.

First, monetary authorities often seem to behave as if their goal is to ensure that no econometrician will ever identify an independent money-supply shock. If money-supply shocks are small relative to real shocks, then the real shocks that affect output are also important sources of short-term variations in the price level. The estimated lag from money to prices will be contaminated by real economic processes that affect money, prices, and output over various horizons.

The second reason for the estimation of a long lag is that we, as econometricians (or chartists), look backward while economic agents look forward. If the past behavior of monetary authorities is an accurate predictor of future behavior, then the econometrician will do well to forecast using models with long lags, but the measured lags will have little to do with the structural mechanisms linking money to the real economy. Estimated models will greatly overstate the output costs of reducing inflation *via* a credible change in monetary policy.

In order to lower interest rates in the medium term, the central bank has to raise them in the short term.

A distinction should be made between a change in the policy stance within a given regime and a change in regime. The statement seems a reasonable description of the dynamic relationship expected within the current discretionary regimes of both the United States and Canada. Under current macro wisdom, the central bank has an incentive to mislead the public about its true inflation goal. If people expect inflation to be low, but the central bank delivers high inflation, then conventional wisdom predicts an economic boom. Given this perverse incentive structure, it would take a longer period of higher interest rates to reduce inflation than would be the case if a credible zero-inflation policy were introduced.

> *The effects of monetary policy depend heavily on expectations in the market and on the credibility of the monetary authority.*

I agree completely. The reason going to zero inflation would be costly is because people would not expect the policy change and would hedge against the day the policy was abandoned. One important problem that needs to be considered in a transition to a credible zero-inflation policy is the fixed interest rate on existing contracts. Whether the Bank of Canada's disinflation will cause a recession depends very much on whether the policy is credible and how quickly zero is achieved relative to the maturity structure of outstanding debt. As Richard Lipsey notes in his introduction to *Zero Inflation*, the chance that the policy will be abandoned is a major source of its cost. Presumably, the Canadian government could reduce this cost by enacting legislation that would institutionalize the goal of price stability.[7]

Although the relevance of conventional macroeconomic wisdom can be debated, it should be noted that, even according to conventional wisdom, there is a large cost to unexpected inflation. Much of the cost of disinflation lies in the unexpected nature of the policy. If the policy regime is changed, there will be a one-time cost to pay. If the regime is not changed, there will be repeated episodes of unexpected changes in the price level, resulting in ongoing welfare losses that will almost surely overwhelm the one-time costs of switching to a zero-inflation regime.

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[7] Currently, in the United States, Congress is debating House Joint Resolution 409, which would make price stability the overriding goal of monetary policy. In West Germany, the Bundesbank operates under a legislated mandate to pursue price stability as the primary goal of monetary policy. See Manfred Willms, "The Monetary Policy Decision Process in the Federal Republic of Germany," in *The Political Economy of Monetary Policy: National and International Aspects*, Conference Series 26, edited by Donald R. Hodgman (Boston: Federal Reserve Bank of Boston, July 1983), p. 36.

The Purpose of Policy Is to Improve the Standard of Living

In *Zero Inflation*, Pierre Fortin writes that the cardinal economic objective of government should be to improve the standard of living of its people. This seems clear. The role of the central bank is to foster a monetary system that creates the best environment for achieving the highest standard of living.

In my judgment, the papers presented in *Zero Inflation* understate the costs of inflation and overstate existing knowledge about the costs of eliminating inflation. The standard macroeconomic model was not designed to do welfare analysis. Not only is it difficult to interpret the welfare implications of macroeconomic predictions, but the conventional macroeconomic framework is designed to analyze monetary policy actions within a given regime, not to evaluate a change in regimes.

The first element of my argument in support of zero inflation is that rules matter. Economics is a way of thinking about how society's rules can be shaped to promote individual freedom and high living standards. By protecting the civil liberties and property rights of individuals, we maximize the standard of living. Wherever possible, the role of government should be to set up the rules, not to interfere with the operation of the system within those rules. In our recommendations about short-run policy actions, we must be careful that we do not inadvertently change the nature of the rules governing the economy.

The extreme alternative to this model of a free-market economy based on rules is the centrally run economy. But we know that all free-market economies are mixtures of rules and central planning. As policymakers and economists, we often lapse into thinking about policy from the point of view of a central planner. *Oikonomos*, the Greek root of the word economy, means the household manager. Many economists think that their job is to help the political leader "manage the household" of the economy, given a set of rules inherited from the past. They tend to concentrate on macroeconomic variables such as aggregate demand and total employment. Their main concern becomes the manipulation of the policy levers to engineer desired outcomes for these aggregates. Herbert Stein compares managing the economy to flying a Boeing 747, implying that the economist's role is like that of the navigator or pilot.[8] I would rather think of the economist as the designer of aviation regulations and air route traffic-control systems. In my opinion, we need economists to design the rules, not to run the system.

Several of the authors of *Zero Inflation* refer to unemployment and introduce hysteresis, the idea that temporary demand-management policies may affect the unemployment level permanently, or at least for a very long time. Indeed, one is as likely to find persistent low (or high) growth across different sectors in a given economy as in similar sectors of different countries.[9] The important point is that national policies seem to matter for the growth rate of the economy. Macroeconomists who talk about hysteresis in unemployment tend to attribute the idiosyncratic aspects of a nation's economy to aggregate demand management.

Neither the theory nor the empirical evidence is sufficient to justify modifying our policies based on these ideas about hysteresis in unemployment. We should not allow a recent but singular event confined to a few countries to overwhelm an abundance of evidence that does not support such ideas. Furthermore, we still do not understand fully how much of the persistence in unemployment can be attributed to institutions affecting the labor market — generous unemployment compensation, plant-closing laws, and widespread unionization, for example, can explain some of this experience. Economists can build particular models in which temporary policies can generate permanent effects; but these models have little generality.

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[8] Herbert Stein, *Governing the $5 Trillion Economy* (New York: Oxford University Press, 1989).

[9] See Alan C. Stockman, "Sectoral and National Aggregate Disturbances to Industrial Output in Seven European Countries," *Journal of Monetary Economics* 21 (1988): 387–409.

Consider another explanation for persistent low growth and high unemployment. In today's free-market economies, standards of living are much higher than those in countries that have been under central planning. The rules matter. Countries with inefficient rules have lower real growth rates. These rules usually take the form of an improper mix of tax laws, entry regulations, subsidies to business, weak antitrust laws, tariffs, erratic inflation policies, among other items. There are good economic explanations for why these factors affect a country's real growth and standards of living. If monetary policy influences the real growth rate and the persistence of high unemployment rates, it probably does so through the microeconomic channels that Howitt discusses, not through macroeconomic channels. If so, inflation and uncertainty about the price level inhibit, rather than stimulate, real growth.[10]

Although particular monetary policy actions within a given set of rules may be neutral, output growth and standards of living can, in principle, be affected by the particular rules adopted. Under current monetary rules in the United States and Canada, the inflation rate is allowed to vary in response to both real shocks and political pressures. This variability introduces an uncertainty about future inflation that is likely to reduce economic efficiency and the real growth rate in the same way that inefficient economic rules lower living standards. The central banker's flexibility to choose the inflation rate also is an opportunity to tax currency and nominal bond holders and to redistribute wealth. There is no reason to think that the central banker can make these decisions any better than the central planner can run the economy.

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[10] Empirical evidence for this can be found in studies of real growth by Roger C. Kormendi and Philip G. Meguire, "Macroeconomic Determinants of Growth: Cross-Country Evidence," *Journal of Monetary Economics* 16 (1985): 141–163; Kevin B. Grier and Gordon Tullock, "An Empirical Analysis of Cross-National Economic Growth, 1951–80," *Journal of Monetary Economics* 24 (1989): 259–276; and Robert J. Barro, *Economic Growth in a Cross-Section of Countries*, Working Paper 201 (Rochester, N.Y.: University of Rochester, September 1989). They find that higher inflation and/or uncertain inflation tend to reduce output growth trends.

Zero-inflation policies are not meant to upset the established monetary system; rather, they are intended to limit discretion. Consider an analogy with the legal system, which is a combination of rules and discretion and includes judges who must face new and unprecedented cases. Such cases might be rare, but they require experience and sound judgment. In theory, good judgment survives a review process and becomes part of the law. Likewise, experienced central bankers are expected to make judgments in new and unprecedented cases. These judgments also go through an informal review process. But to prevent the system from sliding into one of arbitrary authority and central planning, the central bank's actions must be constrained by rules.

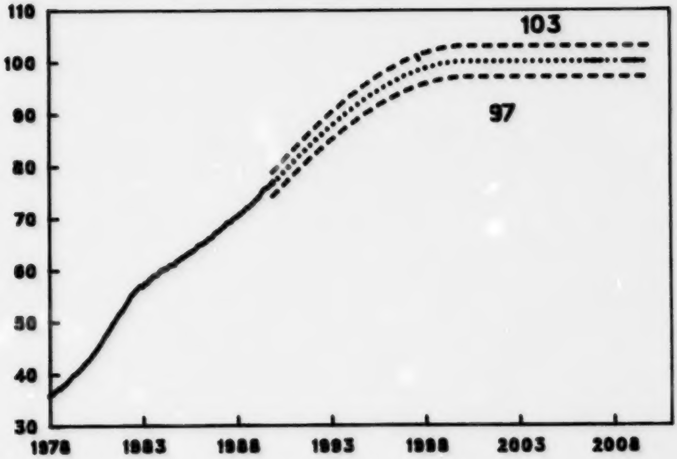
An Explicit Zero-Inflation Policy

The biggest problem monetary policymakers face in achieving price stability is their *apparent* inability to commit to long-term goals. It results, in my opinion, because most policymakers and many economists do not really believe that commitment to an explicit objective would be optimal. Economists typically cite ignorance about all the contingencies that might arise as an argument against monetary policy rules.

Figure 1

A Proposal for Zero Inflation

(Canadian Consumer Price Index, 2000 =100)



Source: Data Resources Incorporated.

In a recent paper, Alan Stockman and I offer an explicit, but flexible, rule for achieving and maintaining zero inflation.[11] We consider a situation in which the central bank is legally required to adopt an explicit target path for the CPI level extending into the indefinite future. We then define a narrow band, an area above and below the target path (see Figure 1). The primary objective of the central bank would be to keep the CPI within this band.

The band should be wide enough so that the central bank could use a variety of procedures to keep the index within it. The Swedish Riksbank, for example, used a combination of discount rate changes, gold purchases and sales, and foreign

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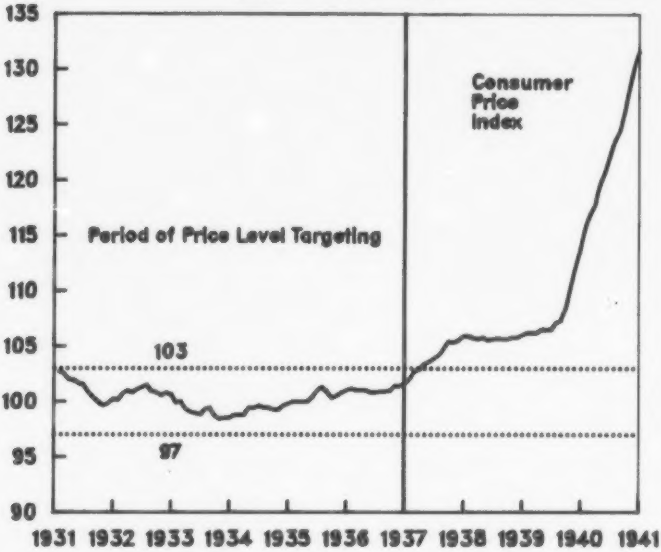
[11] William T. Gavin and Alan C. Stockman, "A Flexible Monetary-Policy Rule for Zero Inflation" (Federal Reserve Bank of Cleveland, September 1989, Mimeographed).

Figure 2
The Swedish Experience with Zero Inflation, 1931–41
(September 1931 = 100)



Source: Swedish Riksbank, *1940 Yearbook* (Stockholm, 1941).

currency operations to keep that country's CPI near 100. The Swedish experience is shown in Figure 2 (our band is imposed on the historical data). The Riksbank chose to abandon its zero-inflation policy in early 1937 so that it could fix to an inflating British pound. Inflation then accelerated rapidly with the start of World War II.

A band of 6 percent — an area 3 percent above and 3 percent below the target level — should be sufficient for either the U.S. or Canadian economies. The CPI is unlikely to move outside of this band unless the central bank intentionally deviates from the target path. Even if the CPI were to move outside of the band, actions taken to get back in the band should be explainable by the monetary authorities and obvious to citizens.

We do not recommend an immediate change to a zero-inflation policy. We would go slowly. We would begin with the actual CPI for the previous year and let the target path rise by the expected inflation rate in the current year. Then we would reduce the growth rate of the target path by 0.5 percent each year until the target inflation rate was zero. To improve communication about the target and the policy stance, the index would be normalized to 100 when inflation on the target path was zero.

One could choose a faster path for disinflation. Most advocates of zero-inflation policies recommend achieving zero within five years. Their reasoning is simply that gradual policies may not be credible. The noise in the CPI, those unavoidable and unexpected changes associated with real shocks, may be large relative to the increments in a gradual deceleration. Witness the Canadian experience. The Bank of Canada claims to be on a path toward zero inflation. Yet, in 1989, inflation rose above 5 percent after having been on a trend of 4 percent for several years. If the policy is stated in terms of inflation and not the price level, then the target-path reductions must be large relative to noise in the index.

We think it is essential for credibility to target the price level. Even if analysis showed that, for economic reasons, one would prefer short-run inflation targets in which past errors were ignored, we believe that political considerations favor a price-level target. At any point in time, there would be an incentive for debtors to lobby for ease and for creditors to lobby for restraint. Random shocks to the economy would cause the price level to rise or fall from one period to the next. The public could never be sure whether a given deviation from target was due to an exogenous shock or the result of capitulation to political pressures. If the target is stated in levels, this ignorance does not matter.

We also think that having a price-level target is important because it represents an anchor, a benchmark that the public can use to monitor the behavior of the central bank. The central bank can begin to build credibility in the first year, even before it begins to lower the inflation rate. People merely would need to watch how the Bank responds to deviations of the price level from the target and listen to how it explains its actions to the government.

Setting the goal in terms of a multiyear path for the price level eliminates the most important objection to a gradual disinflation policy. Eliminating this objection is important because there are some advantages to going slowly. First, a slow transition path does not necessarily require any change in the near-term policy stance; this is consistent with our emphasis on taking a long view. Second, any abrupt change in economic policy is likely to cause an arbitrary redistribution of wealth; a gradual transition reduces the size of this redistribution. Third, any change in policy carries some risk of disrupting the flow of economic activity. A rapid reduction of inflation might induce a recession; the very gradual deceleration that we propose reduces the chance that the transition to a zero-inflation economy will be associated with a recession.

The proposed policy would not prevent short-term movements of the price level; we do not intend it to. But it would prevent long-run inflation, and long-term interest rates would fall. The rate on perpetual bonds in Sweden during the 1930s fluctuated between 3 and 4 percent throughout the period of zero inflation. If the central bank, in alliance with other parts of government, were to commit to this type of rule, we think that long-term rates would fall almost immediately.

The proposed policy need not change the daily operations of the Bank of Canada or strategy agreed on at policy meetings. Indeed, this rule would have no visible effect on central bank activities if the CPI stayed within the band. Also, the central bank would not be prevented from conducting effective countercyclical policy. More likely, our rule would enhance the Bank's ability to conduct such policy. Currently, the public cannot distinguish between a countercyclical policy and a changed inflation goal. Public skepticism limits the ability to conduct countercyclical policy.

Our rule would not prevent the Bank from acting as a lender of last resort or from responding appropriately to financial crises. As long as the CPI remains within the band, no new constraints on policy would arise. In an emergency, the Bank could increase the money supply by any amount. It should be noted that an inflating economy is a crisis-prone economy. Many of the problems we in the United States have had with the savings and loan industry would not have occurred had it not been for the inflation of the 1970s.

Stockman and I describe a somewhat complicated rule for the monetary base that would apply in those instances when the CPI goes outside of the band. Others have recommended tying the central bankers' compensation or tenure to the success of the policy. I do not think such devices are necessary: if the government committed to a goal of price stability, no other incentive would be required for success.

In what kind of a world shall we live? Market economies and monetary systems are institutions built by people. These institutions can serve our interests or they can be allowed to run amok. If we want to live in a world in which we understand monetary policy and the circumstances in which it is likely to be changed, then we need to set a standard that can be easily monitored. A zero-inflation policy, expressed as a price-level target, would provide such a standard.

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Part II

The Costs of Reaching Zero

In this part of the book, two opponents of zero inflation challenge the cost-benefit calculations that supporters of the target have used to buttress their positions. Robert F. Lucas and William Scarth present their own estimates and empirical evidence of the costs and benefits, and conclude that zero is not an appropriate goal. Peter Howitt offers a short rebuttal to this challenge.

The Case for Stable, But Not Zero, Inflation

Robert F. Lucas

Introduction

In the first chapter of *Zero Inflation: The Goal of Price Stability*, Richard Lipsey establishes the ground rules that a critic of the Bank of Canada's policy must follow to be judged reasonable and, therefore, credible. In a nutshell, he argues that a critic must be willing to specify the maximum rate of inflation that ought to be considered as acceptable (x), and perhaps the maximum rate of approach to x (say, rate y) if the current inflation rate exceeds x. Since I consider credibility to be the primary concern of critics as well as central bankers, I wish to state my x's and y's at the outset.

In a paper I wrote in 1989, I stated:

> the Bank has managed to stabilize the inflation rate for the past five years (it has averaged 4.2 percent within a narrow band of 4.4 to 3.9) and there is every reason to believe that it can continue to do so. "Steady as she goes" appears to be the appropriate policy to pursue for the present.[1]

This x, I suggest, places me in Lipsey's highly desirable "reasonable conditional critic" category and, by extension, among those whose views should be judged as highly credible. I also want to note that I passed this test at least ten months before Lipsey formulated it.

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[1] R.F. Lucas, "The Bank of Canada and Zero Inflation: A New Cross of Gold?" *Canadian Public Policy* 15 (March 1989): 84–93.

Since the publication of that paper in 1989, the rate of inflation has risen to the 5 percent range and shows every sign of a further increase in the near term. Thus, I must also address the question of the optimal y. However, I shall defer the discussion of it until later in the essay. First, I want to discuss the significant areas of agreement that I share with the authors of *Zero Inflation*. I then discuss the rationale for my policy recommendation of a constant inflation target of 4 percent, followed by the only substantive criticism I have of *Zero Inflation* — namely, Peter Howitt's attempt to quantify the costs of a steady-state inflation.

The Optimal Rate of Inflation

In 1989, I chose 4 percent inflation as my optimal x because I thought at the time that it represented the most credible policy that the Bank of Canada could choose. This choice, however, does not mean that I disagree necessarily with the central proposition of *Zero Inflation* — that the optimal inflation target is zero percent (or within 1 percent of zero). If the inflation rate can be chosen independent of history, then zero is clearly the preference of most, if not all, mainstream economists. One will not find a better explanation for why this proposition is so widely held than in Howitt's analysis in *Zero Inflation*. The central argument is twofold.

First, even in economies that have experienced inflation over long intervals, there is limited indexing and, as a result, a fully anticipated inflation has the potential to generate significant redistribution of income and wealth. Second, there are inefficiencies associated with positive inflation that might translate into a permanently lower level of gross national product (GNP).

To the many examples of the limited extent of indexing in the Canadian economy that Howitt discusses, I add one more: many laws make no allowance for the effect of inflation on contracts that specify nominal amounts. My favorite example, due no doubt to the many fruitless hours I have spent in the Canadian courts attempting to counteract this effect, is the property-disposition feature of numerous provincial matrimonial property laws.

In the past 12 years, all of the provinces have reformed their matrimonial laws. A common feature of the reforms has been the premise that marriage is an economic and social partnership between spouses. As a consequence, upon a marriage breakdown each spouse is entitled to an equal share of the financial wealth accumulated during the marriage, subject to specific exemptions that differ among provinces. Five provinces exempt prenuptial property.[2] However, a controversial feature of this provision is that only the market value of the property at the time of the marriage is exempt from sharing. Since the legislation does not allow for the effect of inflation on the market value, this exemption is eroded over time as the general price level rises.

This feature of matrimonial property acts has been well documented and has generated calls for reform.[3] In 1985, the Saskatchewan Law Reform Commission suggested that province's act be modified to allow an exemption for increases in value associated with general inflation.[4] The responses of women's interest groups were so overwhelmingly negative that the proposals were never acted on by the provincial authorities. The reform of Ontario's act in 1986, which brought it in line with that of Saskatchewan, suggests that no attempt to index the exemption provision will meet with much success. Thus, there is now an arbitrariness — clearly not intended by reformers — to the calculation of the disposition of prenuptial property in these five provinces based on the amount of inflation that occurs during the marriage. In Saskatchewan, a province where farmland comprises much of the property settlements of marriages, the redistribution generated by even modest inflation can be extraordinary and, some observers suggest, may serve to increase the level of animosity that accompanies marriage breakdown.

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[2] The provinces are Saskatchewan, Ontario, Alberta, Nova Scotia, and Prince Edward Island.

[3] See A. Bisset-Johnson, "Nova Scotia: NS-76," in *Matrimonial Property Law in Canada*, edited by A. Bisset-Johnson and W. Holland (Toronto: Carswell, 1980).

[4] Saskatchewan Law Reform Commission, *Proposals Relating to Matrimonial Property Legislation* (Saskatoon, October 1985).

If I agree with the authors of *Zero Inflation* that zero is the optimal inflation rate chosen *de novo*, why then do I argue that the Bank of Canada should aim for a stable inflation in the range of 4 percent? More to the point, perhaps, why is it that the authors who generally support price stability are unwilling to come down hard for zero inflation? The answer to this question is to be found in the tradeoff between the transition costs of moving to zero inflation and the ongoing costs of positive inflation.

The Transition Costs of an Anti-Inflation Policy

As Douglas Purvis points out in *Zero Inflation*, monetary policy has the potential to wreak great havoc if it is characterized by abrupt shifts that catch individuals by surprise. It is generally agreed, for example, that the 1981–82 recession was brought on by a very restrictive monetary policy at a time when private agents in both Canada and the United States had no reason to predict such a policy on the basis of past central bank behavior.[5] Howitt estimates the cost of this recession at 36 percent of 1982 GNP. Since the recession generated a 7.7 percentage point reduction in the inflation rate, he concludes that the cost of reducing inflation works out to 4.7 percent of current GNP for each percentage point of inflation reduction.

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[5] For empirical support for this view, see J. McCallum, "Unemployment in Canada and the United States," *Canadian Journal of Economics* 20 (November 1987): 802–822.

The current environment requires a five-point reduction in inflation to achieve the Bank's goal. An application of a sacrifice ratio of 5 to 1 suggests that price stability can be obtained by the loss of approximately 25 percent of current GNP. While Howitt recognizes that this cost is significant, he argues that it is possible to pursue a gradual reduction in the inflation rate, rather than the cold-turkey approach which characterized the 1981–82 policy change, and that this gradual approach might result in a lower cost.

As William Scarth argues in this volume, there are theoretical reasons relating to the shape of the Phillips curve to believe that this sacrifice ratio may understate the true cost. Howitt also recognizes the potential for higher costs if the recession generates a permanently higher unemployment rate. Finally, the paper by Pierre Fortin in the present volume provides some new empirical evidence on the sacrifice ratio, and suggests that it is higher than Howitt's estimate.

While I am sympathetic to the arguments of both Scarth and Fortin, I am uncomfortable with all economists' positions on this question, for we are dealing with the costs of a transition from one steady state to another. This is an area of macroeconomic analysis where, to be quite frank about it, the profession's ignorance is legendary. Purvis makes much about the core truths that would emerge from a core macroeconomic model. I have no quarrel with the tenets he identified, but I would like to add one more to his list.

> Neither theory nor evidence points convincingly to any of the numerous competing models of the interaction of nominal and real variables. The economics profession does not have a reliable quantitative or even qualitative model of aggregate supply (or "Phillips curve") behavior. In other words, the profession does not have accurate knowledge of the way in

> which changes in nominal GNP will be divided, on a quarter-to-quarter basis, between real output growth and inflation.[6]

In other words, not only do we not have much confidence in the estimates of particular Phillips curves at any point in time, we do not even have a consensus on the theoretical relationship between money and real variables in the short run.

What do we know about the short-run relationship between money and output? First, although we cannot predict when a tight monetary policy will impact on real variables, we do know that when it impacts it does so with a vengeance — there appears to be a critical threshold that, when breached, produces real effects of a large magnitude. Second, this effect on real variables occurs with a lag that can be long and variable. Third, and perhaps of most importance, the magnitude of the effect depends critically on the expectations of individuals in the market about the course of future policy, and these expectations are unobservable.[7]

A moment's reflection about what we know suggests that economists should be circumspect when attempting to estimate the costs of reducing the inflation rate. I suspect it is precisely this concern about our level of ignorance that, in part, gives the authors of *Zero Inflation* pause in supporting a vigorous fight against inflation.

This conclusion is reinforced by an analysis of the determination of market expectations about future policy, a topic closely related to the issue of the credibility of the monetary authority. The development of theoretical models of the business cycle in the 1970s provided an important role for inflationary expectations, and forced economists to model the formation of expectations in the same manner as other behavior — with a model of optimization. One result of this research effort was the application of the hypothesis of rational expectations — that is, that people process information efficiently — to the formation of inflationary expectations.

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[6] B. McCallum, "The Case for Rules in the Conduct of Monetary Policy: A Concrete Example," *Federal Reserve Bank of Richmond Economic Review* 73 (Autumn 1988): 175. Further support for this position, which I suggest is the mainstream view, can be found in the comments of M. Parkin, "Inflation," and M. Dotsey and R. King, "Business Cycles," both in *The New Palgrave: A Dictionary of Economics*, edited by J. Eatwell, M. Milgate, and P. Newman (London: Macmillan, 1987).

[7] For example, the Bank of Canada's attempt in February 1990 to orchestrate a 25 basis-point decline in the level of interest rates produced a 3 percent depreciation of the Canadian dollar — a depreciation which can only be explained by a dramatic shift in investors' expectations of future policy.

Since conventional models of the inflationary process assign a critical, if not absolute, role to the rate of expansion of monetary aggregates, it follows that individuals will have to forecast the growth rates of these aggregates if they are to form efficient forecasts of inflation. The ultimate control over these growth rates rests with the Bank of Canada. As a consequence, a rational expectation of inflation requires a prediction of central-bank behavior.

This proposition initially suggested the possibility of a relatively costless disinflation policy. If the central bank announces a lower growth rate of monetary aggregates, and if individuals find this announcement credible, then the lower inflation might be achieved without much of the transitional unemployment costs identified above.[8] The 1981–82 recession demonstrated that credibility is not so easily achieved. The problem is that a central bank is not constrained in any significant way in its choice of the rate of expansion of monetary aggregates and, thus, of the rate of inflation. Therefore, even if the Bank of Canada announces a particular target for policy, there is no reason for individuals to believe that it will follow through, particularly if the announced target is inconsistent with its past actions.

What can the Bank do to generate credibility? In his contribution to this volume, William Gavin outlines his basic requirements for a credible zero-inflation policy. First, the

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[8] For this reason, the Bank of Canada placed a great deal of emphasis on the publication of target growth paths for M1 money during the 1975–81 period.

Bank should adopt an explicit target path for the Consumer Price Index (CPI) extending into the indefinite future. Second, there should be a band about this target to allow for temporary deviations from the target path. Third, the Bank should state explicitly how it will react to deviations of the price level outside of the target band, and this reaction must be verifiable by market participants. While I am not willing to concede that such a policy would eliminate all of the transition costs in a disinflation policy, I agree that it would have more credibility than the present policy.[9]

My choice of 4 percent inflation hinges on the issue of credibility. In the past 30 years, the Bank has never achieved price stability for two successive years. In addition, it has not adopted an explicit date for reaching its goal. Therefore, I think the policy lacks credibility. The Bank can still achieve price stability with a restrictive policy, but this is precisely the conditions under which the costs of the transition will be maximized.

I argue that the Bank should aim for 4 percent, the average of the past five years — a strategy that is clearly consistent with past behavior and thus much more credible. Yet, this argument is incomplete, for it ignores the costs of an ongoing inflation.

The Costs of Long-Run Inflation

In *Zero Inflation*, Howitt identifies two general costs of an ongoing inflation. First, there are the efficiency costs resulting from the combination of lower real money balances, a smaller capital stock, higher price uncertainty, and a lower growth in labor productivity. Second, there are the equity costs associated with a redistribution of income and wealth that an inflation generates in an economy with limited indexing.

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[9] In his announcement of the policy, Governor John Crow specified a goal of price stability, but did not indicate the target date. In subsequent announcements, the goal has been softened to one of broad price stability, and again with no target date. Compare, for example, the comments of Crow in "The Work of Canadian Monetary Policy" (Eric J. Hanson Memorial Lecture delivered at the University of Alberta, Edmonton, January 18, 1988); reprinted in *Bank of Canada Review*, February 1988, pp. 3–17; and in "Remarks to the Winnipeg Chamber of Commerce, Winnipeg, December 14, 1989", reprinted in *Bank of Canada Review*, December 1989, pp. 29–35.

The efficiency costs alone, Howitt suggests, are of a magnitude that would dwarf any transition costs associated with a reduction in the inflation rate. For example, he refers to a study by Jarret and Selody, which concludes that 1 point of inflation generates a loss of future income growth through a decline of 3⁄10 of a point in the growth rate of labor productivity.[10] Under reasonable assumptions about the components of the net discount factor, this productivity loss translates into a loss of 16 times current GNP in present value terms for each point of inflation. This figure is so large that even Howitt is cautious about placing too much emphasis on it. Yet, even if it overstates by 100 percent the true effect, the reader is left with the impression that inflation inflicts tremendous efficiency costs on the economy. A consideration of the other sources of inefficiency simply reinforces this impression.

If inflation is so costly, then why is the economics profession's attitude toward it so ambivalent? Blanchard and Fischer, for example, make the comment that,

> despite an impressive array of models in which inflation is socially costly, there appears to be professional consensus (which we believe is less justified than it was a decade ago) that economics cannot justify the weight put on low inflation as a goal of policy.[11]

William Scarth, in his contribution to this volume, discusses a number of theoretical criticisms to Howitt's arguments, and this may in part explain the ambivalence. I suggest, however, that the primary reason is that, despite much ingenuity on the part of theorists in identifying possible sources of inefficiency associated with inflation, there is no conclusive empirical evidence to support the view that average inflation has a negative effect on the growth rate of real GNP. What, in fact, have researchers found?

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[10] P. Jarret and J. Selody, "The Productivity-Nexus in Canada, 1963–79," *Review of Economics and Statistics* 64 (August 1982): 361–367.

[11] O. Blanchard and S. Fischer, *Lectures on Macroeconomics* (Cambridge, Mass.: MIT Press, 1989), p. 569.

In a cross-sectional study of 78 countries using post-World War II data, Robert Barro finds no significant long-term relationship between real growth and the rate of change of nominal variables.[12] John Geweke tests the structural neutrality of the growth rate in money with respect to the growth rate of output using annual data from the United States between 1870 and 1970 and quarterly data since World War II, and concludes that "the results provide strong support for the structural superneutrality of money with respect to output measures."[13]

Roger Kormendi and Phillip Meguire have carried out a cross-sectional analysis of the growth experience of 47 countries using data since World War II.[14] They demonstrate that the mean rate of money-supply growth may have a positive effect on the mean rate of growth of real GNP (contrary to the hypothesis that inflation is costly), although this effect seems to be generated by the experience of Brazil, which has experienced high rates of growth of both variables. When Brazil is excluded, money-supply growth rates have no effect on real GNP growth rates. The authors also find that *increases* in average inflation rates have a significant negative effect on GNP growth rates, but there is some question whether this evidence supports the view that high but constant inflation is costly in terms of foregone output growth.

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[12] R. Barro, *Macroeconomics*, 3rd ed. (Toronto: John Wiley, 1990), chapter 18.

[13] J. Geweke, "The Superneutrality of Money in the United States: An Interpretation of the Evidence," *Econometrica* 54 (January 1986): 1–22. Superneutrality is the proposition that changes over time in the growth rates of monetary aggregates do not affect real variables such as constant-dollar GNP or real interest rates.

[14] R. Kormendi and P. Meguire, "Macroeconomic Determinants of Growth: Cross-Country Evidence," *Journal of Monetary Economics* 16 (September 1985): 141–163.

Kevin Grier and Gordon Tullock have recently built on the Kormendi and Meguire model by adding additional countries to the sample. They find that, for the developed countries of the Organisation for Economic Co-operation and Development (OECD), average inflation had no effect on real GNP growth rates between 1951 and 1980.[15] For the underdeveloped countries, they find a significant negative relationship between average inflation and real growth, but this effect seems due primarily to the experience of the African countries. That is, when Asia and the Americas are analyzed separately, the relationship disappears for these groups.

Robert Lucas, Jr. finds support for the propositions that a given change in the rate of change in the quantity of money induces an equal change in the rate of price inflation and an equal change in nominal rates of interest. He uses quarterly U.S. time series data from the 1953–77 period.[16] Together with the result of Kormendi and Meguire that increases in the mean rate of money-supply growth have no effect on the growth rate of real GNP, this evidence supports the view that

> neither the long-period evidence nor that from across countries suggests important effects on real variables from differences in the average growth rates of money, prices, or wages. That is, in the long run there is no systematic relationship between real variables and nominal variables.[17]

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[15] K.B. Grier and G. Tullock, "An Empirical Analysis of Cross-National Economic Growth," *Journal of Monetary Economics* 24 (September 1989): 259–276.

[16] R. Lucas, "Two Illustrations of the Quantity Theory of Money," *American Economic Review* 70 (December 1980): 1005–1014.

[17] Barro, *Macroeconomics*, p. 479.

Thus, whatever the merits of Howitt's theoretical arguments in favor of high efficiency costs of inflation, there is no empirical evidence to suggest these costs *exist*, let alone that they are of a magnitude to warrant another recession to avoid them.

The second general cost that Howitt identifies — and one which I agree is probably significant — is the equity cost associated with the redistribution that occurs as a result of limited indexing. Even if one accepts my argument that the efficiency costs are not of concern, is it not possible that this equity cost could outweigh the temporary costs of fighting inflation?

The simple answer is no, and the reason is straightforward. When a central bank orchestrates a recession, the lost output is lost forever. In contrast, when inflation redistributes income and wealth, it is transferred from one group to another with no loss in the aggregate. Now, economists are socialized at a very early professional age to disregard redistribution effects, and for good reason. An economist has no comparative advantage in discussing redistribution, for there is nothing in his tool kit to enable him to make objective, interpersonal comparisons between winners and losers. Since the economist's concern is total social welfare and, therefore, efficiency (in the sense of achieving the most with limited resources), it is clear that he will always view as more costly a policy that destroys income rather than one that redistributes it.[18]

I do not intend to suggest that the body politic shares the profession's ordinal ranking of the two types of costs. In fact, the reverse is quite likely. One does not need to be overly cynical to conclude that, either by design or by chance, much of the federal and provincial legislation enacted in any year results in a redistribution of income and wealth among Canadians. An overriding concern for distributional effects is probably the reason why the general public tends to place a much greater emphasis on inflation than does the economics profession. Nevertheless, as economists, we do not have to share this concern except to the extent that an inordinate fear of inflation could lead to policies that have large efficiency repercussions.

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[18] This approach implicitly assigns an equal weight to each dollar of each individual; the general public would reject this view. However, in the absence of both a consensus regarding the appropriate weights and evidence about who gains and who loses in a long-run inflation, it is difficult to argue otherwise.

Implications for Current Monetary Policy

As promised, I now turn to the issue of the rate at which one approaches *x* when the current inflation rate exceeds *x* — Lipsey's *y*. My choice in 1989 of a target of 4 percent was based on a simple proposition. Inflation had averaged 4.2 percent for the past five years within a narrow band of 4.4 to 3.9 percent. Therefore, I argued that it would be reasonable to assume that expectations in the marketplace were in the neighborhood of 4 percent and that, if the Bank of Canada announced such a target, it would be perceived as credible by market participants. Thus, the Bank could continue a stable inflation policy without concern for the state of inflationary expectations.

Since this position was published, the average inflation rate has risen to over 5 percent in spite of attempts by the Bank to institute a zero-inflation policy. Furthermore, this rise in the rate of inflation cannot be traced to any unique event such as the imposition of a goods and services tax. Therefore, if the Bank allows this increase to persist, it risks a resurgence of inflationary expectations. Moreover, if the Bank were willing to validate any inflationary impulses that impact on the Canadian economy, the inflation rate would continue to rise until public pressure or the Bank's own concern caused a policy reversal that would generate another recession.

It is important to highlight the distinction, evident in the above argument, between a policy designed to generate a steady inflation of, say, 4 percent and one that generates a variable inflation rate. If there is one thing about inflation that all economists can agree on, it is that a variable inflation generates the highest costs. Variable inflation is so costly because it is difficult to forecast accurately, and the unanticipated component creates income and wealth redistribution and resource misallocation.[19]

Thus, my fear of an acceleration in the rate of inflation is not based so much on a reading of the costs of high inflation — although presumably the costs are an increasing function of the rate of inflation — as on a fear that the Bank will be goaded into action, as it was during the 1981–82 recession. In this sense, high and rising inflation is undesirable precisely because the Bank may think it necessary to institute a disinflation policy.[20] The higher the inflation rate when this occurs, the more severe will be the subsequent recession. Consequently, even though I do not favor a move to a lower rate of inflation, I do support a policy designed to prevent an acceleration of the inflation rate. In other words, stable inflation is the appropriate goal.

The distinction Purvis draws between temporary changes in the rate of inflation and changes in the underlying trend is important in this regard. I think the Bank should have the discretion to treat the inflationary consequences of one-time shocks that are clearly identifiable as such differently than, say, the increase in inflation that accompanies an expansionary phase of a business cycle. As long as the contingency is well defined and publicized, it need not result in a loss of credibility for the Bank.

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[19] Not surprisingly, the reason economists agree on this proposition is because there is much empirical evidence to support the theoretical arguments. See, for example, Grier and Tullock, "An Empirical Analysis."

[20] There is a long-standing debate in the profession about whether the exercise of discretionary power over the money supply has been stabilizing or destabilizing. The theoretical innovations and events of the past 20 years have not been kind to the view that central banks do more good than harm. For a recent treatment of this issue, see R. Barro, "Recent Developments in the Theory of Rules versus Discretion," *Economic Journal*, Supplement (1985): 23–37.

Conclusion

I began this paper by asking why the authors of *Zero Inflation* fail to come down hard for zero even though they argue that zero is the optimal target. I think the answer is apparent. There is no evidence that there are large efficiency costs to a modest inflation, while there is dramatic evidence that the attempt to achieve zero will generate a significant loss in real GNP.

I have also argued that the Bank of Canada should not let the inflation rate rise above the average of the past five years; if it does, the potential exists for significant disruptions to the economy. In 1989, I concluded that there is much theory and empirical evidence to suggest that a central bank should eschew policy regime changes that by their nature generate expectational error with attendant redistributions of income and wealth and inefficient fluctuations in income and employment. There is no analysis in *Zero Inflation* to indicate that a rethinking of this position is in order.

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Fighting Inflation: Are the Costs of Getting to Zero Too High?

William Scarth

Introduction

For over two years now, Canada's central banker has been stressing that his target inflation rate is precisely zero, since that is the only value that involves "inherent consistency and credibility."[1] The purpose of this essay is to assess the desirability of this goal and, by doing so, to pay particular attention to some of the points raised in the papers on this topic that appear in the C.D. Howe Institute's *Zero Inflation: The Goal of Price Stability*.

The economist's standard approach is to argue that any activity should be pursued to the point where the marginal benefits are driven down to the level of the activity's marginal costs. Concerning the fight against inflation, the application of this standard cost-benefit approach is complicated by the fact that the benefits of lower inflation are in the form of an annuity (an increased amount of material welfare that can be enjoyed every period forever, once a new full equilibrium is reached), while the cost of fighting inflation is generally thought to be just a temporary loss. While the recession that accompanies disinflation can be deep and protracted (as that in the early 1980s was), it is easy to see how most economists can conclude that it is appropriate to fight inflation. As long as one does not discount future gains too heavily (while bringing both costs and benefits to present values to make them comparable), the estimated benefits of lower inflation can be the dominant component in the calculation.

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[1] John W. Crow, "Targeting Monetary Policy" (Remarks by the Governor of the Bank of Canada to the British-North American Committee, Montreal, December 2, 1989); reprinted in *Bank of Canada Review*, December 1989, p. 23.

It must be remembered, of course, that it is costs and benefits *at the margin* that must be compared. The relevant question is: Starting from a particular inflation rate (call it *x*), should one move to a slightly lower inflation rate? This question can be asked repeatedly, as one considers starting from ever-lower values of *x*. Most economists accept the following three propositions:

- that the cost of bringing inflation down to the 5 percent range in the 1980s was worth the benefit;
- that the benefit of a 1 percentage-point reduction of inflation gets smaller as *x* falls; and
- that the cost of achieving a 1 percentage-point reduction of inflation is roughly independent of *x*.

Taken together, these views suggest that the optimal inflation rate is not likely to be absolutely zero. However, as long as the costs of inflation are substantial when *x* equals 5 percent (as it does now), then the optimal inflation rate is much closer to zero than to 5 percent. This is why most economists, roughly speaking, support the Bank of Canada's policy.

In terms of methodology, I am in complete agreement with the approach just described, and I accept the core macroeconomic model that the authors of *Zero Inflation* adopt. I have misgivings, however, about two of the three beliefs that have been inserted into this methodology.

I have no qualms about the proposition that the benefits of fighting inflation outweighed the costs when *x* was 11 or

12 percent. However, I do think that the benefits of disinflation have been overestimated. I also think that the costs of fighting inflation have been underestimated, especially since I believe that the costs rise as x decreases and as the level of international indebtedness rises. These views lead me to the conclusion that the marginal benefits of further disinflation probably balance the marginal costs at an inflation rate in the range of 3.0 or 3.5 percent. Thus, while I entirely support the Bank's behaving so that inflation does not rise — and, indeed, so that it is pulled down *gradually* to the range just suggested — I do *not* support the precise goal of absolute price stability.

In *Zero Inflation*, Richard Lipsey argues that, to be credible, all critics must explain the alternative they have in mind. The remainder of this essay is devoted to providing that fuller explanation. The discussion considers each of the following topics in turn: the static excess burden of the inflation tax, calculating the sacrifice ratio, capital formation and foreign indebtedness, the importance of fiscal policy, and credibility issues.

The Static Excess Burden of the Inflation Tax

Inflation is, among other things, a tax on the holders of money; the tax base is the real purchasing power of the nation's monetary base, and the tax rate is the inflation rate. According to the principles of public finance theory, the overall tax system is most efficient when one taxes only those items for which the very levying of the tax causes no change in economic behavior.[2] When society chooses a suboptimal combination of goods and factors, material welfare is reduced.

Thus, the overall burden of a tax has two components: the revenue paid to the government, and the loss in satisfaction resulting from the distortion of choices induced by the tax. This latter part of the burden is called the excess burden of the tax; and on efficiency grounds, one wants to minimize these losses. But since virtually all taxes distort some choice made by private agents,[3] the general efficiency principle becomes: use each tax up to the point that the marginal excess burden per dollar of tax revenue generated by the tax is the same for all taxes. According to this approach, then, one cannot decide the optimal rate of inflation without knowing the excess burden per dollar of revenue for all other taxes.

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[2] This argument presumes that the relative price signals that were established by the market without the tax were appropriate — for example, that there were no externality problems initially.

In his essay in *Zero Inflation*, Peter Howitt summarizes some of the evidence on these matters, and concludes that the excess burden ratio for taxing money is several times that for taxing labor. But the calculations Howitt cites can be questioned, and when more reasonable estimates of the relevant elasticities are used, it is difficult to escape the conclusion that the excess burden ratios for these two taxes are about the same.[4] This suggests that money should be taxed, and that the optimal inflation rate is positive.

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[3] The head tax is often cited as the only tax that scores well on this efficiency criterion, on the grounds that people will not remove their head in order to escape the tax. However, if it is the family that is the relevant decision-making unit, some tax avoidance would probably be stimulated through its effect on the family-size decision. In any event, head taxes are quite regressive, and taxes are judged on the grounds of equity as well as efficiency.

[4] The formula for the marginal excess burden per dollar of the inflation tax revenue is $n/(1-np/i)$, where n, p, and i are the interest elasticity of the demand for high powered money, the inflation rate, and the nominal interest rate, respectively. Assuming $n = .1$, $p = .05$ and $i = .09$, the excess burden ratio is .106. A common estimate for this ratio for the tax on labor in the United States is .3. These numbers suggest that money should be taxed more and labor should be taxed less. However, E.K. Browning has convincingly argued that this standard work involves an overestimate, and that a more realistic excess burden ratio for labor taxes is .12. See E.K. Browning, "A Critical Appraisal of Hausman's Welfare Cost Estimates," *Journal of Political Economy* 93 (1985): 1025–1034; S. Fischer, *Indexing, Inflation and Economic Policy* (Cambridge, Mass.: MIT Press, 1986), p. 46; and B. McCallum, *Monetary Economics* (London: Macmillan, 1989), p. 129.

So far, the discussion in this section has assumed that it is appropriate to treat money either as a commodity like any other consumer good, or as a basic factor of production like labor. Howitt points out that it may be more appropriate to view money as an intermediate product. In this view, "money" refers to the whole set of services that are provided by the financial sector. This can be an important change in interpretation, since, according to the optimal tax literature, it is never optimal to tax intermediate products.[5] The question, then, is: Should one apply this argument to money? There appears to be no consensus answer. Kimbrough has noted that some models which involve money having an explicit intermediate role still lead to the conclusion that money should be taxed.[6] Kimbrough's own model avoids this conclusion, but he admits that his treatment of financial intermediation is "crude." Modern theory that attempts to explain the development of financial intermediation as a response to a missing market problem has not been considered within the optimal tax framework.

In my view, it is speculative to predict where this developing literature on treating money as an intermediate good will lead. Also, it must be remembered that the optimal tax literature ignores administrative costs and consideration of the "underground economy." Since the tax on money can be collected without any administrative expense, and since it is difficult to explain the amount of cash holding by existing models without acknowledging the use of cash as a mechanism for avoiding other taxes,[7] it is likely that the optimal inflation rate is positive

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[5] The reason for this is that taxes on intermediate products distort both producer choices concerning the appropriate inputs to use, and consumer choices concerning which goods to buy. Taxes on consumer goods involve only this latter distortion of choices.

[6] See K. Kimbrough, "Optimal Taxes in a Monetary Economy with Financial Intermediaries," *Journal of Macroeconomics* 11 (1989): 493–511, and the references cited there for a discussion of money as an intermediate good.

[7] Fischer, *Indexing, Inflation and Economic Policy*, p. 46.

(despite the theorem in the optimal tax literature concerning intermediate goods). In any event, these "shoe-leather" costs of inflation are unlikely to be the most important ones, and so the issues raised here probably should not carry much weight in coming to an overall decision.

Calculating the Sacrifice Ratio

I now want to switch the focus to the costs of fighting inflation. The standard macroeconomic model used by essentially all policy analysts involves the "natural rate" hypothesis. According to this hypothesis, monetary policy — that is, the inflation rate — can affect neither the long-run sustainable level of real output nor the unemployment rate in full equilibrium (both of which are real variables). But, because wages and prices adjust sluggishly in the short run, monetary policy has real effects on the way to full equilibrium, and a disinflation policy causes a temporary recession and a temporary rise in unemployment. The size of this temporary output loss depends on at least three things:

- the slopes of the aggregate demand and supply curves;
- the speed at which wages adjust to market pressures — that is, the speed at which the short-run aggregate supply schedule shifts down during disinflation; and
- the speed at which inflationary expectations are revised.

Most analysts stress the expectations effect, and use it to argue that the destabilizing effects of expectations will be at their minimum if literal price stability is pursued. But insufficient attention has been paid to the first two points, and here I want to rectify this imbalance in the discussion.

Analysts often calculate the "sacrifice ratio" involved in disinflation. This is the cumulative (undiscounted) loss in gross domestic product (GDP) that results during the temporary recession, per unit of lower inflation achieved from the disinflation policy. The standard estimate is a number such as 5, and this is consistent with the numbers Howitt discusses in *Zero Inflation*.

The common practice, which Howitt follows, is to assume that the sacrifice ratio will be the same for bringing inflation down from 5 percent to zero as it is for bringing inflation down from 10 percent to 5. In a recent paper, I examine a standard expectations-augmented aggregate demand/supply model and show that this assumption is not satisfied in at least two cases.[8] If the money-demand function has a constant interest-rate elasticity, or if the short-run Phillips curve is flatter at lower average inflation rates, then the sacrifice ratio will be greater when one starts a disinflation policy from an already lower inflation rate.

The intuition behind these propositions is fairly straightforward. The flatter is the short-run tradeoff curve, the bigger is the recession that is needed to generate any given reduction in the rate of wage and price change. The curvature of the money-demand function matters because, once the new lower inflation rate is reached, money demand will be higher, so that prices must fall more than the money supply during the disinflation process. How much more depends on the curvature of the money-demand function. The money-demand schedule is flatter at lower levels of inflation (and nominal interest rates); and the flatter the curve, the bigger is the increase in real money that must be generated by the temporary recession (and so the bigger or more protracted must be the temporary recession caused by disinflation).

What I have just described is the standard "re-entry" problem. This problem can be eliminated if the money supply is increased in a once-and-for-all fashion at some point during the disinflation process. This was accomplished during the early 1980s, and Milton Friedman and others stressed at the time that credibility problems would limit the success of this policy. When data are only published at discrete intervals, it is hard to convince agents that a tight monetary policy is in effect when money has increased. In other words, Friedman was not confident that observers could distinguish changes in the rate of growth of money from discrete changes in its level. The experience of the early 1980s shows that it *is* possible to convince agents that money growth and the level of money are independent instruments, but only up to a point. After all, if this separation of money growth and level policies was fully possible, the recession of the early 1980s could have been avoided. The severity of that recession means that one should *not* expect that future "re-entry" problems can be perfectly eliminated.

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[8] See W. Scarth, "The Costs of Disinflation" (McMaster University, Hamilton, Ont., mimeographed).

The critical question is: How much bigger is today's sacrifice ratio likely to be, compared with the one that was relevant in the early 1980s? In my recent paper, I show that the sacrifice ratio doubles if the Phillips curve is flatter (or has a slope that is half its earlier value); and the sacrifice ratio also doubles if the nominal interest rate at the start of the disinflation policy is half the value it started at in previous disinflations.[9] Another study examines 43 countries with rather different average inflation rates to test the simple prediction of "menu cost" theory that the Phillips curve is flatter at lower mean inflation rates.[10] I have extended this study's empirical work, and have confirmed its result that the slope of the Phillips curve at a mean inflation rate of 5 percent is half the value it has at a mean inflation rate of 10 percent.

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[9] As noted earlier, this second difference would not represent a more severe problem compared with the earlier disinflation, if it could be eliminated by an increase in the level of money. But I show that this required increase is *also* twice as big, when starting from the lower inflation rate.

[10] See L. Ball, G. Mankiw, and D. Romer, "The New Keynesian Economics and the Output-Inflation Trade-Off," *Brookings Papers on Economic Activity* 19 (1989): 1–65, and Scarth, "The Costs of Disinflation." As a substitute for reading this work in progress, the reader can simply take equations...

To assess the other influence may seem more straightforward. After all, it is clear without formal empirical work that the nominal interest rate was much higher in 1981 than it was in 1988–89 (when the current disinflation policy began). But the real issue is: What is the appropriate functional form for the money-demand function? The constant-elasticity form is not the only one that makes the money-demand function convex to the origin. Others, such as Cagan's hypothesis, have this same general curvature, but leave the sacrifice ratio independent of the nominal interest rate value at which the disinflation policy starts. However, the available empirical work, supports the constant-elasticity form.[11]

The upshot of all this is that it would not be outrageous to argue that the relevant sacrifice ratio for the current disinflation policy may be roughly *four times* that involved in the earlier disinflation. I do not claim that there is firm enough evidence to be certain that the sacrifice ratio has increased this much.

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10 - cont'd.

...1 and 2 on page 163 of my text; calculate the impact effect of money growth on real output; divide this impact multiplier by the speed of adjustment; and impose the constant elasticity form for money demand (see W. Scarth, *Macroeconomics: An Introduction to Advanced Methods* [Toronto: Harcourt Brace Jovanovich, 1988]). Peter Howitt has pointed out to me that there are other models of disinflation in which the sacrifice ratio is not a function of aggregate demand parameters at all. For example, if inflationary expectations are adaptive, and the actual inflation rate is the exogenous policy variable (instead of the money-growth rate), the sacrifice ratio depends only on two parameters: the slope of the short-run Phillips curve and the coefficient of expectations revision. This is correct, but if the Phillips curve equation also contains an output change term (to capture Lipsey's "loops"), even this way of defining the policy and expectations leads to the proposition that the sacrifice ratio depends inversely on the rate of interest that prevails at the start of the disinflation (not just inversely on the slope of the Phillips curve).

[11] See A. Gregory and M. McAleer, "Testing Non-Nested Specifications of Money Demand for Canada," *Canadian Journal of Economics* 16 (1983): 593–602.

In addition to the need for further empirical work to increase confidence, this analysis must be repeated for small-open-economy models. For example, the sacrifice ratio may be different when a country disinflates on its own, rather than along with its major trading partners.[12] But surely it must be acknowledged that there is fundamental uncertainty concerning the presumption that the sacrifice ratio has not increased. This is all that need be granted to question any unqualified statement that 5 percent inflation is definitely too high.

There is one other consideration that leads to an upward revision in the estimated sacrifice ratio: hysteresis. There is now both empirical evidence for, and numerous theories to explain, the outcome that what the standard core model takes to be a temporary output effect can lead to some permanent effects. In other words, there is a serious challenge to the core theoretical view that has supported all policy decisions during the past 20 years. Howitt discusses numerous mechanisms through which a temporary recession can cause a permanent reduction in real output. Considerations such as a cohort of workers losing the opportunity to gain skills while working, insider power, and Canadian companies failing to acquire the necessary marketing infrastructure during the period immediately following the Canada-U.S. Free Trade Agreement all lead to these permanent losses. Also, other classes of models, such as those involving customer markets or thin-market trading externalities, do not involve hysteresis *per se*, but they do involve multiple solutions. In these models, a so-called temporary recession can lead the economy to a lower-output full equilibrium.[13]

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[12] Among other things, the extent of exchange-rate overshooting will be different.

[13] For a summary of some of these theories, see D. Mortensen, "The Persistence and Indeterminacy of Unemployment in Search Equilibrium," *Scandinavian Journal of Economics* 91 (1989): 347–370. On the time series properties of output and employment, see O. Blanchard and S. Fischer, *Lectures on Macroeconomics* (Cambridge, Mass.: MIT Press, 1989), ...

As noted, Howitt discusses the possibility of hysteresis, but this has just become an active research area, with few definitive results so far. Accordingly, he decided not to involve this consideration in his numerical cost-benefit exercise (although he does assume that future disinflations would involve just as slow a recovery in the unemployment rate as was observed following the 1982 policy). I prefer to get a feel for what is involved in the hysteresis possibility, by conducting the following illustrative experiment. To take a conservative scenario, suppose that, without allowing for any hysteresis, the sacrifice ratio is 5 — that is, I am ignoring the other points made in this section of the paper. Suppose that the experience of a recession lowers the natural output rate by just 1 percent of the temporary losses. This makes the present value of the additional output loss (due to hysteresis) (.01) (5) / (.015) = 3.3.[14] If the no-hysteresis sacrifice ratio is added to this, the estimate is revised to 8.3. This is a significant proportionate increase, and the permanent reduction in output has been allowed to be only one-twentieth of 1 percent. This simple exercise illustrates that allowing for just a very little bit of hysteresis can significantly raise the estimated costs of disinflation.

Considering both hysteresis and the implications of the nonlinearities in the aggregate demand and supply functions (emphasized earlier in this section), I think the costs of further disinflation in Canada have been noticeably underestimated. It may well be that some disinflation is still called for, but surely

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13 - cont'd.

...chapter 1. It should be noted that, for practical purposes, it does not matter whether support for pure hysteresis, or just support for very slowly damped adjustment, is found. That is, if shocks have almost permanent effects, the revision in the sacrifice ratio will still be dramatic.

[14] The cumulative temporary output loss during the disinflation is 5 percent of GDP for each percentage point of disinflation. I am assuming for illustration that this temporary fall-off in economic activity has a permanent effect of lowering output by one one-hundredth of that — that is, by one-twentieth of 1 percent of GDP. Howitt assumes a growth rate of .025 and a discount rate of .04, so I have used .015 as the discounting factor.

a cautious approach would have to acknowledge that there is likely some relevance to the concerns raised in this section of the paper. If so, it seems that before zero inflation is reached, the costs of further disinflation will outstrip the benefits.

Inflation, Capital Formation, and Foreign Indebtedness

What determines the "natural rate" of output in the standard macro model? Other than the brief consideration of hysteresis effects in the previous section, this question has been ignored thus far. But this can be an important oversight if one believes, as Howitt does, that inflation affects the natural rate of output. Indeed, Howitt's numerical cost-benefit exercise involves (as the main benefit) a higher natural rate of output following from lower inflation. In this section, I question the mechanism through which this long-run cost of inflation operates in a small, open economy.

The main argument against inflation on dynamic grounds is that capital formation is restricted. This conclusion is reached by noting that, since the interest income tax is not indexed for inflation, the effective after-tax real return on savings is:

$$e = i(1 - t) - p,$$

where e, i, t, and p stand for the effective yield, the nominal interest rate, the tax rate, and the inflation rate, respectively. Noting that the nominal interest rate equals the sum of the real rate, r, plus the inflation rate, $i = r + p$, the expression for the effective yield becomes:

$$e = r(1 - t) - pt.$$

As long as the real interest rate is independent of inflation in full equilibrium, a higher inflation rate reduces the effective yield on savings. This decreased incentive to save will lead to lower investment and, therefore, to a smaller, full-equilibrium capital stock, if three conditions are met:

- savings respond noticeably to variations in effective yields;
- investment is not stimulated by inflation, so that the pretax real rate of interest, r, is not increased by enough to maintain the effective yield, e, at its initial value; and
- there is no other source of savings (such as from foreigners) that can be used to maintain the pre-existing level of investment.

In my view, neither the second nor the third of these conditions is plausible for Canada. As a result, I argue that the long-run benefits of a lower inflation rate need to be calculated by a different method than that used by Howitt.

Many estimates of the interest elasticity of savings suggest that these effects can be exaggerated, but this is not the point which I want to stress at all. Instead, let us assume that savings are significantly reduced by inflation, but let us also note that, according to standard theory, investment depends inversely on the implicit rental cost of capital. Thus, investment is stimulated when this implicit cost, c, decreases. The rental cost of capital is the forgone interest that is available from alternative assets, e, plus the rate at which capital depreciates, a. Thus:

$$c = e + a.$$

Since inflation changes c by just the same amount as it changes e, the investment function shifts up by the same amount as does the savings function, in a diagram where both schedules are drawn as functions of the real rate of interest. The result is that the pre-tax real yield increases by just enough to keep savings (and therefore investment) from falling with higher inflation. There is no long-run cost of inflation, in terms of reducing the natural rate of output.

I admit that I have ignored the corporate profits tax in this discussion, and it is often argued that since depreciation allowances are also not indexed, this is another avenue through which inflation reduces capital formation. But Robin Boadway has shown that if firms use the tax deductibility of interest expenses to the full extent allowed by the law, then the rental cost of capital is not affected by inflation through this consideration either.[15] In fact, firms do not choose to be levered to the full extent permitted by the law, but Boadway's point is still important, since it keeps us from overstating the steady-state costs of inflation. For the remainder of the analysis in this section, I shift the focus to the slightly different approach that Howitt prefers. I extend that framework and concentrate on the implications of "perfect capital mobility" — an assumption which is generally regarded as very suitable for Canada.

The alternative framework for considering the effects of inflation on the stock of capital is pictured in Figure 1. The supply of capital employed in the economy is shown by the vertical line. The negatively sloped demand curve shows the willingness on the part of domestic residents to own that capital. The initial equilibrium point is A. Ignore the horizontal line through A for the moment. Inflation reduces the effective rate of return on capital, and Howitt assumes that this reflects a reduction in the physical productivity of capital. The willingness of domestic residents to own capital is reduced, and this is shown by the downward shift in the demand schedule. The new equilibrium is point B, and the cost of inflation is measured as the loss in capital's earnings that occurs with the shift from A to B.

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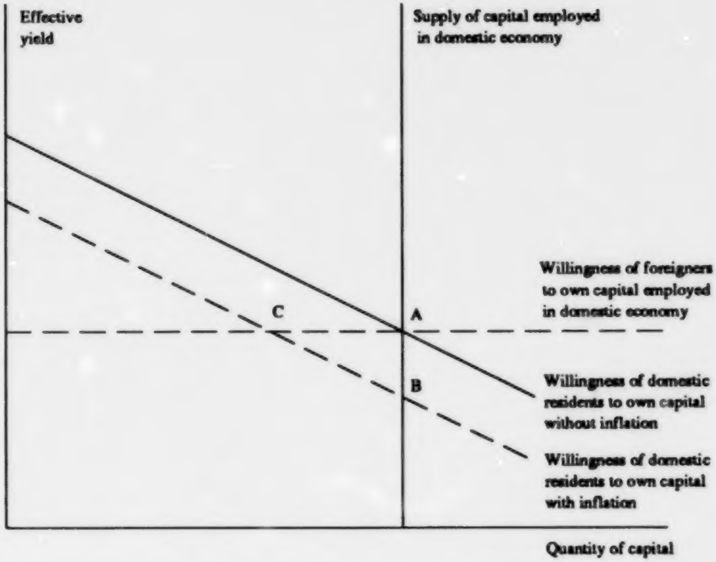
[15] See R. Boadway, "Corporate Taxation and Investment: A Synthesis of the Neo-Classical Theory," *Canadian Journal of Economics* 13 (1980): 250-267.

Figure 1


Effective yield
Supply of capital employed in domestic economy
Willingness of foreigners to own capital employed in domestic economy
C
A
B
Willingness of domestic residents to own capital without inflation
Willingness of domestic residents to own capital with inflation
Quantity of capital

I prefer to focus on the fact that in a small, open economy such as Canada, foreigners stand ready to own the capital employed here — shown in Figure 1 by the horizontal line through A — even if the effective yield to domestic residents has been reduced. As inflation shifts down the schedule of domestic willingness to own capital, the new outcome is point C, not B. Foreigners simply take over the ownership of proportion CA of the capital stock. This means that national *product* in the future is not diminished by inflation, but national *income* is affected, since the full-equilibrium level of foreign indebtedness is different. Higher foreign indebtedness means a lower level of wealth for domestic residents, so that the lasting effect of a decrease in the effective yield on savings is a fall in steady-state consumption, not a fall in the natural rate of output.

One can calculate the size of this loss in steady-state consumption by estimating the proportion of the area of the rectangle formed by point A in Figure 1 that is transferred to foreigners by the move from A to C. Howitt estimates the size of the A-to-B loss in this area to be substantial. Since his method of estimation involves the implicit assumption that the marginal productivity schedule is unitary elastic, the size of the A-to-C loss is exactly the same. I conclude that Howitt's calculations can be taken as appropriate, even when viewed from the rather different perspective of this highly simplified, small-open-economy model. Despite this conclusion, it remains important to maintain the different open-economy interpretation of these losses, for two reasons.

First, in an accompanying paper in this volume, Robert F. Lucas summarizes some empirical work that suggests that output is not reduced by a higher inflation rate. This work threatens the existence of this cost of inflation under Howitt's interpretation, but not under the open-economy interpretation given above. In the open-economy reasoning, the cost of inflation is a lower level of income and consumption for domestics, which follows from an unchanged level of output.

Second, current deficit spending contributes in a large way to Canada's growing foreign-indebtedness problem. Most proponents of further disinflation give very little weight to this issue, which is difficult to understand if the main cost of inflation is growing foreign indebtedness. The open-economy reasoning of this section makes it explicit that all aspects of the monetary/fiscal policy mix that impact on the foreign-indebtedness ratio should be considered in a consistent fashion, and we will return to this issue below.

Howitt's numerical estimate of the dynamic efficiency losses from inflation seem to be reliable. However, it must be remembered that the simple-open-economy analysis in this section left out many things, such as exchange-rate changes. In another study, J. Burbidge and I have eliminated these simplifications (in an analysis of tax policy), and we show that a policy package that both lowers the effective yield on savings and keeps foreign debt constant *raises* steady-state consumption and utility.[16] In this extended framework, the package of tax changes operate like an optimal tariff — they shift the terms of trade in Canada's favor. Thus, while the model of the simple, open economy discussed here supports Howitt's numerical calculations, a more complete analysis may not. The existing estimates of the effect of inflation on capital formation and foreign indebtedness may overestimate these costs.

The Importance of Fiscal Policy and Credibility

Much of the analysis in the earlier sections of the paper presumes that the economy does, in fact, eventually reach its steady state. This presumption of eventual convergence may normally be quite acceptable, but it cannot be regarded as such when the fiscal authority is bond financing all its cash requirements. It is well known that stability exists in this situation only if the after-tax real interest rate on government debt is less than the underlying real growth rate of the economy.[17] No reasonable analyst can assume that this condition is met, since (among other things) it implies that many components in cost-benefit studies would be infinite. (This is why Howitt assumes a discount rate of 4 percent and a growth rate of 2.5 percent in his calculations.) It is important to realize, therefore, that if one wants to conduct standard cost-benefit studies, logical consistency demands that pure bond-financed deficits be rejected as infeasible.

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[16] See J. Burbidge and W. Scarth, "Tax Policy in Closed and Open Economies" (McMaster University, Hamilton, Ont., 1990, mimeographed).

[17] See W. Scarth, "The Government Budget Constraint and the Canadian Policy Problem" (Paper presented at the McGill University Conference on Deficits, Montreal, December 1989).

This is a fundamental point for assessing current monetary policy, since slightly more than 99 percent of the federal deficit was bond financed throughout the 1980s. It is no wonder that the deficit remains high, despite the fact that the federal government cuts the primary deficit in each budget. As long as the remaining deficit is fully bond financed, the overall deficit must begin to rise again. I do not understand how some analysts can argue that the Bank of Canada should pursue a disinflation policy involving an exogenous rate of monetary expansion when instability is implied by this decision. Steady-state welfare cannot be improved as the ratio of foreign debt to GDP advances toward infinity.

The main basis for claiming that disinflationary monetary policy should proceed despite the government's fiscal stance is the view that the Bank may be able to create fiscal discipline. The idea is that, by refusing to money finance some of its cash requirements, the Bank is playing a game of "chicken" with the fiscal authority. If the government realizes that the Bank is determined to proceed on its course despite the instability involved with bond-financed deficits, it may move to a more disciplined budget policy. But this is a dangerous game. If fiscal policy cannot change rapidly, Canada gets a large, permanent increase in its foreign indebtedness, and the main intended benefit of lower inflation is wiped out. I cannot see how the credibility of monetary policy is enhanced by proceeding in this way. The existing combination of monetary and fiscal policy eliminates the main benefit that is supposed to be gained from disinflation.

The standard retort to this concern is: Just because fiscal policy is set improperly, why should monetary policy be set improperly too? My reaction is simply to clarify the options. Apparently, the fiscal authority will eventually see reason once the foreign-indebtedness ratio has risen dramatically through a series of bond-financed deficits. But why wouldn't the fiscal authority also see reason if the foreign-indebtedness ratio rose dramatically because of inflation? The cost to residents is the same in either case, so it is not clear why monetary discipline is the only hope for eventually achieving fiscal discipline. Perhaps the argument is that the combined cost of inflation and bond-financed deficits must be maximized to get fiscal discipline. While raising this question, I must emphasize that I am not calling for discretionary monetary policy. Nor am I suggesting that the Bank should permit any increase in inflation. I am just arguing that it may be worthwhile to wait a short period before engaging in further disinflation, to give some time for a fiscal correction to be effected first. *If* this were accomplished, the increase in foreign debt would be less.

In discussing hysteresis, I noted that it mainly represents a rather new area of research and that many of its conclusions are controversial. But it is also worth noting that one form of hysteresis is neither new nor in dispute: the instability of pure bond-financed deficits. Temporary shocks lead to permanent changes in foreign indebtedness. As long as the overall policy mix is set so that instability is involved, the costs of that policy package are increasing significantly. Thus, I must disagree with David Laidler, who argues in *Zero Inflation* that most of the costs of the current disinflation have already been paid.

Since I am assessing the credibility of policy, a comment on the use of the Barro-Gordon tradeoff model (the standard framework for discussing credibility issues) is warranted.[18] According to this analysis, it is better for the monetary authority to remain passive with respect to short-run variations in output and employment. Once the authority demonstrates that it has tried to exploit the fact that, at any point in time, private expectations are given, agents expect positive inflation indefinitely, and steady-state welfare is lower than if the authority is passive. The analysis suggests that it is important that the authority develop a reputation as a nonaccommodator.

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[18] For a concise summary of this model, see S. Fischer and L. Summers, "Should Governments Learn to Live with Inflation?" *American Economic Review Papers and Proceedings* 79 (1989): 382–387.

It is this analysis that prompts many advisors to argue that only a target inflation rate of zero is appropriate. Anything else demonstrates that the authority cares about real variables, and its reputation is therefore shot. If it is prepared to accept 5 percent today, why will it not accept an even higher target in the future?

My main comment on this line of reasoning is that the Barro-Gordon analysis simply presumes that the optimal inflation rate is zero. If, instead, the optimal inflation rate is worked out to be x percent, then the analysis is altered in only one respect: it is better for the authority to pick the inflation rate at x, and then continue to be a nonaccommodator. It is only when the authority opts for an inflation rate greater than x (not any positive rate) that it demonstrates that it is an accommodator. What makes x percent more believable than $(x + 1)$ percent is the careful analysis of economists, and the explanation of that analysis by the Governor of the Bank in his speeches. The thing that makes x more credible as a target than $(x + 1)$ is that x is the optimal inflation rate. So the credibility issue should solve itself, if the underlying cost-benefit analysis can be clearly defended.[19]

Conclusions

In this essay, I have tried to comment on several of the important costs and benefits of further disinflation in Canada.

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[19] A second comment on the reputations model is worth making. Things are more complicated when uncertainty elements are added. Garman and Richards have shown that while a passive monetary policy eliminates the inflationary bias, it can worsen the cyclical properties of the model (see D.M. Garman and D.J. Richards, "Policy Rules, Inflationary Bias, and Cyclical Stability," *Journal of Money, Credit and Banking* [1989]: 409–422). It is because uncertainty effects can raise both the costs of inflation and the costs of limiting inflation that I have left this issue out of the cost-benefit calculations.

My omission of other considerations — for example, the distributional effects of inflation — is based on my decision to focus on those components of an aggregate cost-benefit study for which there is some chance of calculating a reasonable estimate, and to build on Peter Howitt's valuable foundation in this regard.

My results suggest that the benefits of further disinflation have probably been overestimated. This conclusion stems from two considerations:

- "shoe-leather" costs are not large when compared to the marginal excess burden associated with other taxes; and
- the fact that inflation reduces the incentive for domestic saving, and so may increase foreign indebtedness, does not lead to as large a cost as that found in closed-economy analyses.

In addition, the costs of further disinflation have been rather dramatically underestimated. This conclusion follows from three considerations:

- the fact that both the short-run Phillips curve and the money-demand schedule are flatter at lower inflation rates means that the size of the temporary recession that accompanies disinflation may be several times that involved with earlier battles with inflation;
- hysteresis and multiple-equilibria issues mean that some of the output losses that accompany disinflation may be permanent; and
- foreign indebtedness is significantly increased if further disinflation forces budget deficits to be even more heavily reliant on bond financing, and if contractionary monetary policy is unsuccessful in forcing fiscal policy to be more disciplined within a short time horizon.

These rising costs of disinflation lead me to the conclusion that the optimal inflation rate is not zero. Indeed, in *Zero Inflation*, Pierre Fortin explains that measurement biases alone justify a target inflation rate of almost 1 percent. It seems likely that the rising costs will dominate the cost-benefit calculation before the inflation rate is reduced from 5 percent all the way down to 1 percent. Thus, while there is much guesswork involved, I suspect that the Bank of Canada's target should be something in the 3 or 3.5 percent range. More generally, I am suggesting that the target should be somewhat higher than the average level advocated by the authors of *Zero Inflation*.

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A Comment

Peter Howitt

There are many points on which I agree with William Scarth's paper. For example, we both agree that the benefits of reducing inflation are long lasting and substantial. Although we use different approaches for measuring those benefits, we arrive at similar magnitudes. We also agree that the main cost of reducing inflation is incurred in the form of higher unemployment, which may be just transitory, but which will appear to be much larger if there is a lot of persistence to the natural rate of unemployment. Finally, we agree that, taking into account these costs and benefits, the optimal long-run inflation rate is somewhere less than the current 5 percent but more than zero.

We disagree, however, on how costly it is to reduce inflation and, consequently, on whether the optimal long-run target is closer to zero or 5 percent. My view, which I express in detail in the C.D. Howe Institute's book, *Zero Inflation: The Goal of Price Stability*, is that those costs are substantially less than the benefits of further reduction starting near a 5 percent rate and, hence, that the optimal target is much closer to zero than to 5. Scarth challenges this view, partly on the grounds that reducing inflation would be more costly now than it was in the early 1980s, and partly on the grounds that persistence in the natural rate of unemployment could make a big difference. I would like to discuss each of those grounds in turn.

The Cost of Inflation Reduction

Scarth argues that the sacrifice ratio — the output cost of reducing inflation by one point — is higher now than it was in the early 1980s. This is a two-part argument, the first part of which can be summarized as follows. When the Bank of Canada reduces inflation by reducing the rate of growth of the money supply, unemployment rises because wages continue to rise as before, despite the fall in inflation — the rise in real wages induces firms to lay workers off. One reason why wages continue rising is that workers expect inflation to continue, and they try to protect their real incomes. Now these wage increases may be moderated if people see the rate of monetary expansion falling and take this as signalling a fall in inflation. The problem, according to Scarth, is that for technical reasons having to do with the demand for money, a given reduction in the rate of inflation will require the Bank to reduce the rate of monetary growth by a smaller amount now than would have been required in the early 1980s. Therefore, workers will see a weaker signal, wage increases will be moderated less, and more unemployment will result.

I find this part of Scarth's argument unpersuasive. The main reason why wages continue to rise when monetary restriction is applied is that previous contracts are still in effect, and new contracts will incorporate wage increases to catch up with past inflation. Inertia comes from delayed reaction to the past, rather than anticipation of the future. The future is too hard to predict, and the past too hard to forget for it to be otherwise. Furthermore, to the extent that workers do try to anticipate the future cost of living, they do not do so by looking at the current rate of growth of the money supply. Most Canadians do not even know what it is. Instead, expectations are likely formed by simple extrapolation of recent inflation trends. Thus, I see no reason why there should be any more inertia in wage increases now than there was ten years ago.

Sticky Wages and Sticky Prices

The other part to Scarth's argument is that there is more wage and price rigidity now than there was in the early 1980s. The reason is that, because people have become used to a lower rate of inflation, they change selling prices less frequently and they sign nominal wage and debt contracts of longer duration than before. This part of the argument is supported by some empirical evidence,[1] and it makes more sense to me than the first part. However, it is fair to say that the argument is based on a recent theory that has yet to stand the test of sustained critical scrutiny by other economists. Because of this, I think it would be unwise to place a great deal of weight on it. Furthermore, even if the argument were taken at face value, Scarth's numerical calculations show that it would not overturn my conclusion that the cost of reducing inflation is much smaller than the benefit.

Persistence in the Natural Rate of Unemployment

Let me turn now to Scarth's argument that persistence in the natural rate of unemployment could overturn my conclusions. I believe I bend over backwards in *Zero Inflation* to allow for persistence in the natural rate. I certainly did not calculate the sacrifice ratio by looking at the slope of a Phillips curve in which persistence is assumed away. Instead, I estimate the ratio on the basis of the experience following the 1981–82 recession, in which the problem of persistence seems to have been even greater than usual. It took fully eight years for the rate of unemployment to return to its 1981 level. I go to the extreme of attributing this eight-year burst of unemployment entirely to the recession. It could easily be argued that this overstates the sacrifice ratio, on the grounds that much of that rise in unemployment would have occurred even without the 1981–82 recession, because of the sectoral and regional shocks that hit the Canadian economy in the mid-1980s.

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[1] See, for example, L. Ball, G. Mankiw, and D. Romer, "The New Keynesian Economics and the Output-Inflation Trade-Off," *Brookings Papers on Economic Activity* 19 (1989): 1–65.

The Issue of Credibility

My disagreement with Robert Lucas is twofold. First, I disagree with his argument that lack of credibility makes it impossible for the Bank of Canada to reduce the rate of inflation below 4 percent without causing a massive recession. Lucas argues that wages will continue to rise in anticipation of a 4 percent rate of inflation no matter what happens, because people have decided that the Bank does not have the will to bring inflation down any further. This argument is based ultimately on the same expectational mechanism as Scarth's first argument, and I find it incredible. To repeat, wage increases are based much more on reaction to the past than on anticipation of the future, and to the extent that people do try to anticipate inflation they are more likely to extrapolate recent trends in inflation than to adopt a monetarist perspective and try to forecast what the Bank of Canada will or wil not do. They certainly do not predicate their wage demands on dogmatic beliefs about the Bank's policies and their effects on inflation.

Efficiency Gains from Inflation Reduction

The other point on which I disagree with Lucas is his assertion that there is no empirical evidence of large efficiency gains from reducing inflation. On the contrary, Peter Jarrett and Jack Selody estimate enormous gains.[2] Furthermore, the vast empirical literature on the effects of inflation on the rate of interest, which Lucas himself cites, is in fact the empirical basis of my estimated large efficiency gains. The reasoning is simple. As Lucas says, much of the evidence points to a one-for-one effect of inflation on the nominal rate of interest. This suggests that the *before-tax* real rate of interest would be unaffected if inflation were reduced. But by the same token, it implies that the *after-tax* real rate faced by most savers would be substantially increased, because Canada's unindexed tax system is less of a burden when inflation is lower. This effect on the rate of return faced by Canadian savers produces an efficiency gain that I estimate to be almost 2 percentage points of gross national product per point of inflation reduction. In his paper, Scarth uses different assumptions to arrive at an estimate almost as large.

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[2] P. Jarrett and J. Selody, "The Productivity-Nexus in Canada, 1963–79," *Review of Economics and Statistics* 64 (August 1982): 361–367.

Lucas is certainly right in maintaining that any cost-benefit analysis of inflation reduction will depend upon effects that are very hard to quantify. This is partly because the institution of money is so deeply imbedded in our economy that inflation has a systemic effect not restricted to any particular market. Conventional cost-benefit analysis is ill-suited for analyzing effects that are not isolated to a few markets. This difficulty is compounded by the inability of conventional economic theory to make much sense at all of the institution of money. It is hardly surprising that analysis based on the idea that money is of no fundamental importance will not find much benefit from stabilizing the value of money.

There is an equally important reason why the data cannot settle the question of whether or not to reduce inflation: so much rests on how heavily one discounts the benefits that will be enjoyed by future generations. The decision to reduce inflation is primarily an investment in the country's future. The Bank of Canada has implicitly argued that this investment is worth making. In my opinion, there has been a tendency in recent years, in both the public and the private sectors, to make decisions with too little regard for the future. The Bank is one institution that is trying to buck that trend, and I believe it deserves our support. Opponents of this point of view are, at least implicitly, discounting the future much more heavily than I would. I cannot point to any facts to say that they are wrong, but I can say I do not think we should be so short-sighted.

Part III

Two Opposing Views from the Markets

This part presents two opposing views on the zero-inflation target from participants in financial markets. Wood Gundy's John Grant believes that stable prices ought to be the touchstone of monetary policy. Douglas Peters, of the Bank of Nova Scotia, believes that monetary policy should entail more than just the quest for stable prices; rather, it should be used to achieve other, equally important goals, such as low unemployment, a fair distribution of income, and balanced trade with the rest of the world. Both Grant and Peters, however, are skeptical that the Bank can hit the zero target.

Fallacies and Detriments of a Zero-Inflation Policy

Douglas Peters

Introduction

On reading *Zero Inflation: The Goal of Price Stability*, one is tempted to say that the discredited economic policies of monetarism are alive and well and living at the C.D. Howe Institute. *Zero Inflation* has many of the elements of the monetarist policies of the 1970s. It is essentially conservative. It focuses on the price level as opposed to other goals of economic policy. It concentrates on the rate of growth of the money supply as the important economic variable. And it downplays the short-term costs and hardships of reducing inflation, while promising great benefits in the future from a stable price level. "Zero inflation" is, in my view, an oxymoron.

My comments on *Zero Inflation* can be grouped into five areas. First, there is the question of how the inflation rate is calculated. Second, does monetary theory match reality? Third, what are the appropriate goals for economic policy? Fourth, I wish to comment on the costs and benefits of price stability. Finally, and briefly, I offer some notes on recent economic policies.

The Measurement of Inflation

Several of the authors of *Zero Inflation* mention that Canada's inflation rate is running at five percent or more. A more careful look at Canada's inflation reveals, however, that this is not the case. Over the past six and one-half years, the inflation rate has remained very close to four percent. When inflation has exceeded four percent, it has almost always been the result of increases in federal and provincial excise taxes.

The most recent examples of substantial excise tax increases occurred in the 1989 federal budget and in some provincial budgets presented in May and June 1989. These increases pushed Canada's inflation rate, when measured on a year-over-year basis, to over five percent — 5.5 percent is the rate that has been quoted in the press.

If, however, one were to measure the inflation rate in the same manner as economists do most other economic statistics — that is, at seasonally adjusted annual rates — one would find that from July to December 1989, it stood at only 3.2 percent. Even the sharp increases in food and energy prices that took place in January 1990 — the largest in almost a decade — raised the six-month seasonally adjusted annual inflation rate to just about four percent. Moreover, Statistics Canada has noted that all of the increase in inflation in early 1989 was the result of increased excise taxes.

It is very important, when discussing inflation, that increases in such taxes be noted as special items and even excluded from inflation that is caused by private-sector decisions. In addition, it is essential for a clear understanding of inflation that Statistics Canada continue its efforts to produce an index of consumer prices that separates out such tax increases.

Monetary Theory: What Is Money?

Several of the authors of *Zero Inflation* indicate that a definition of money is both possible and useful, and that the central bank can control the growth of some defined "money supply". Monetarist theory is based on there being a "money supply" that is a clearly defined number in the economy.[1] But money is not defined either by the state or by the central bank. It is defined by consumers and businesses in terms of what they will accept in exchange for goods and services.

The problem is that major institutional and technological changes in the financial area have caused theory and practice to part company. Over the past decade, numerous new types of deposit accounts and money-market instruments have been introduced, causing most of the definitions of the money supply to become misleading. At the present time, depositors in Canadian banks have an astonishing array of deposit instruments available, and in many cases very high interest rates are paid on accounts on which cheques may be written. The Toronto Dominion Bank, for example, offers chequing accounts paying interest in excess of 12 percent per year compounded monthly, which are almost perfect substitutes for many money-market instruments. In addition, many Toronto Dominion Bank customers purchase money-market instruments — such as treasury bills, bankers' acceptances, and commercial paper — that can be quickly converted into cash and added to their deposit accounts. These items are not small — at times, they have exceeded the size of personal deposits. Such changes greatly affect the various definitions of the money supply, and especially the growth rates of the money supply under conditions of rapidly changing interest rates. Moreover, numerous other institutions have developed in Canada that hold large deposit balances subject to cheque. Many of these are not included in the traditional definitions of the money supply and do not report their statistics weekly or even monthly.

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[1] In the 1960s, a distinguished American professor of money and banking asked me how it was possible in Canada to define or control the "money supply" given the existence of interest-bearing savings accounts on which cheques could be written — in effect, interest-bearing demand deposits. The institutional arrangements in the United States at that time restricted the holding of chequable deposits to banks, and prohibited the paying of interest on those deposits. These arrangements made a unique definition of the "money supply" possible. Things have changed to such a degree since the 1960s that — with the substitutability of money-market instruments and interest-bearing demand deposits — to define the "money supply" in any meaningful way seems not only difficult but rather impossible.

More important than these deposit innovations have been innovations in the payments system. The method of payment used most is the credit card. Yet nowhere is this included in the money-supply figures, nor is there much discussion as to what number — the unused credit balances available to credit-card holders, for example — should be included. It is very clearly the case, however, that businesses and consumers have accepted the use of credit cards for the exchange of goods and services in a way that clearly represents "money".

To further complicate the definition of "money", the banks occasionally increase authorized credit-card limits across the board for many of their customers, changes that add hundreds of millions of dollars to available credit. Does this constitute an increase in the "money supply"? It is not clear how this would even be considered in any monetary policy equation. But it is an important phenomenon, and it is wrong for the central bank to ignore it in formulating its policy decisions.

If, as I have argued, it is impossible to define the money supply adequately in such a changing financial system, then to attempt to target the money supply is illusory. Instead, the only rational solution is for the central bank to fall back on some vague set of "credit conditions" as targets, and keep its eye focused even more carefully on the real variables in the economy — employment, unemployment rates, real or nominal gross domestic product (GDP), and the international current-account balance.

Economic Policy Goals: Price Stability *versus* the Others

Not only in *Zero Inflation*, but also in the statements of many central bankers, the term "price stability" has been accorded a level of importance well beyond the other goals of economic policy. Central bankers in Canada and elsewhere seem to think that price stability is the Holy Grail of central bank policy. If they truly believe this, they are seriously in error, and the economies of the major industrial nations are in trouble.

If price stability is to be elevated above the other objectives of economic policy, then there should be a reason. Is price stability more important than achieving real economic growth, rising productivity, higher levels of employment, a viable balance of payments, or a better distribution of income? Many central bankers and the authors of *Zero Inflation* tell us that, without price stability, none of the other objectives can be attained. But is price stability the quintessential ingredient of a viable economic policy? Neither analysis nor statistics would support such an argument.

On the contrary, price stability is only useful if it promotes the achievement of the other objectives of economic policy and, therefore, ought to be subsidiary to them. When central bankers tell us their objective is price stability, we should ask them how much improvement in real growth, employment, productivity, the balance of payments, and the distribution of income they expect from a stable price level, and at what cost would they achieve that more stable price level in terms of lower economic growth, higher unemployment, less productivity, and a more detrimental balance of payments in the near term. In other words, the central bankers ought to express their estimates of the real value of price stability in terms of the costs they are incurring in the economy at the present time, and give us their discount rates, if they can. This is not to say that price stability is a bad objective — one should certainly not trust any central banker who is not in favor of it. But neither price stability nor zero inflation is enough.

Several times in *Zero Inflation*, the term "wage settlements" is used. Similarly, when one peels away the anti-inflation policies of central bankers, when one gets beyond the talk of various money supplies, one often finds "wage settlements" at the core of their interest in measuring inflation.

Certainly, wages are an essential item to consider if the model of price change is a wage mark-up model. The wage share of national income is relatively constant — which is the essence of the wage mark-up model — and probably more constant than any money-supply multiplier or money-demand equation. But is monetary policy the instrument to control wage settlements? If it is, then it is a blunt instrument indeed. What the central bank does is slow down the economy so that sufficient numbers of people are thrown out of work to affect their ability to obtain wage gains. As a side item, it also restricts corporate profits in such a downturn, thus inhibiting the ability of business to grant wage increases. Thus, we have a picture of the central bank putting workers out of work and businesses out of business to influence wage settlement discussions! Truly a ludicrous situation.

One of the authors of *Zero Inflation* mentions that wage settlements follow the inflation rate, and suggests that, to reduce wage increases, the economy should be run with substantial slack in both labor and product markets for several years. But surely, there must be a better way to influence wage settlements — if they are indeed the key to price stability — than through tight monetary policy.

The Costs and Benefits of Price Stability

Peter Howitt's essay in *Zero Inflation* is very interesting in that he attempts to balance the costs and benefits of proceeding to a period of price stability. The estimates he uses of the benefits of price stability are extremely large, but it seems to me that there is little evidence that such benefits were obtained from past periods of price stability.

If one accepts the suggestion that a 1 percent annual increase in the Consumer Price Index (CPI) is the equivalent of price stability, then Canada experienced price stability for 11 years from 1951 to 1962. Indeed, from September 1951 to May 1956, there was no trend at all in the CPI, and the inflation rate was zero.[2] Yet it does not seem, in subsequent years, that Canada achieved the vast increase in benefits that Professor Howitt and others state would accrue from such an event. In fact, in the early 1960s, after a decade of price stability, Prime Minister Diefenbaker appointed a National Productivity Council (later to become the Economic Council of Canada) to examine why Canada's productivity — the strong growth of which is necessary evidence of the benefits of price stability — was lagging and not growing.

Among the costs of moving toward price stability is rising unemployment. Yet, largely ignored are the unmeasured social costs of rising crime rates, increased sickness, and higher health costs, as well as the psychological costs of losing one's job or of being laid off indefinitely and being unable to find suitable or rewarding employment.

In weighing the benefits and costs of price stability, or of moving toward stability, different sectors of the economy will apply different discount rates to future benefits. The marginal employee, the business on less-than-solid ground, and lower-income groups are all likely to have very high discount rates for future benefits, and they will be the ones that bear the short-term costs. Tenured university professors and public servants with indexed pensions are likely to have fairly low discount rates; future benefits may look substantially better to them, and they are unlikely to pay any of the short-term costs.

Recent Canadian Economic Policy

A cartoon by Malette in the February 19, 1990, *Financial Post* shows two individuals shovelling paths through the snow parallel to each other: Finance Minister Wilson, on the road to deficit reduction, is shovelling his snow directly onto the path that has just been opened up by the Bank of Canada, which is shovelling its way toward inflation control. The Bank, of course, is filling in the path made by Mr. Wilson. This seems to me to be a succinct description of recent Canadian economic policy.

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[2] The CPI (1950 = 100) stood at 116.5 in September 1951 and at 116.6 in May 1956. By September 1962, the CPI had increased to just 131.0 (Bank of Canada, *Statistical Summary Supplement*, 1954, 1958, and 1962).

In 1988, the Bank raised interest rates and tightened monetary policy to fight inflation, which was then running at the same four percent rate that it had been at for the previous five years. In the 1989 budget, Finance Minister Wilson was faced with a substantially increased fiscal deficit because of higher interest rates; he therefore raised excise taxes. Several provincial governments followed suit. The result was a sharp increase in the inflation rate. As monetary policy in the United States eased in 1989, Canada's policy remained very tight in order to fight the inflation that was caused by fiscal policy's higher excise taxes. As a result of these higher interest rates, the federal fiscal deficit rose and became an even greater problem for Mr. Wilson's budget in February 1990. As a result, he reduced future federal payments to the provinces. One will now have to see whether the provinces raise taxes to make up for the lost revenues; and, if they do, one will have to see by how much that will raise Canada's inflation rate. Monetary policy seems to be causing fiscal deficits, which are fixed by raising taxes, which cause higher inflation, which monetary policy fights with even higher interest rates, which cause greater fiscal deficits.

Perhaps the Finance Minister and the Governor of the Bank of Canada should be sat down and told that they have different duties for the next few months. The Finance Minister will be in charge of reducing inflation, and he can therefore go out and get those excise taxes down. The Bank will be told that it no longer needs to worry about inflation (the Finance Department is looking after that) and that it is now in charge of deficit reduction. The Bank could then get those short-term interest rates down to reduce the federal deficit. Perhaps after a few months of that effort, we could again look at economic policy in some rational sense.

It is also important to note, in any discussion of recent economic policy, that fiscal and monetary policy have become intertwined. The effect of higher short-term interest rates is to raise interest payments by the federal government, because its debt is largely held in short-term instruments. The Finance Department estimated in the 1989 Budget Papers that a 1 percent rise in short-term interest rates increases federal interest payments, and thus the federal deficit, by $1.6 billion. By now, the figure is likely to be closer to $1.75 billion because of the increased size of the short-term debt. Those interest payments go into the hands of consumers along with increased interest payments from corporations, which are also net short-term debtors. Thus, one result of a tight monetary policy is a spurt in consumer incomes. This can be seen in the National Accounts statistics for the fourth quarter of 1989. The most rapid growth in personal incomes was interest and investment income, which rose at an annual rate of 11.7 percent in the fourth quarter and increased by 14.4 percent in 1989 over 1988. There was no increase in the savings rate, so that this increased interest income was spent. Such an increase in income accounts for the larger-than-expected increase in consumer spending last year. Monetary policy, when government debt is held in short-term form, has the additional effect of increasing consumer incomes when it raises short-term interest rates.

What does a tight monetary policy affect? To some extent, it adversely affects business and residential housing investment. It does not discourage consumer spending, but rather encourages it by increasing consumer interest incomes. But the major effect is in the foreign sector — higher interest rates push the Canadian dollar higher, making imports cheaper and exports less profitable or less competitive. This throws the international current account into deficit, as was the case in

1989. While the export sector languished, the domestic economy continued to grow rapidly. It would be possible to argue that Canada has reached a point where a tight monetary policy is not only self-defeating but also destructive.[3]

Conclusion

Price stability, or "zero inflation", is only a supplementary objective to achieving the other goals of economic policy — namely, economic growth, low levels of unemployment, a balance of payments that achieves a rough balance on current account, and a reasonable distribution of income. To place it above these goals is wrong. Inflation, when considered in terms of private-sector supply and demand, must be measured without the effects of increased excise taxes. We should also look at inflation in terms of seasonally adjusted rates rather than year-over-year figures. There is no historical evidence to indicate that price stability, such as was achieved in the 1950s, had any of the very large benefits that are credited to it by some advocates. We must remember that it is the poorest segment of society that will bear the costs of moving toward a regime of price stability and that these costs will be social and psychological as well as economic.

And, finally, there is no consensus in product or labor markets that price stability or "zero inflation" is either desirable or achievable. Without such a consensus, the costs of moving toward price stability would be enormous.

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3 My views on what Canadian monetary policy should have been were presented to the House of Commons Standing Committee on Finance in May 1989 in a paper entitled "An Alternative Monetary Policy for Canada." This paper was reproduced in large part in the *Globe and Mail* (Toronto), May 27, 1989, under the title "Single-Minded Pursuit of Price Stability No Match for Economic Reality."

Zero Inflation: A Touchstone of Central Bank Policy

John Grant

Price Stability as a Long-Run Goal

I would like to start by declaring that I strongly favor the pursuit of price stability. I do not favor it as a goal to be temporarily achieved, but rather as an accomplishment that, once attained, should remain the touchstone of central bank policy into the indefinite future.

Seen in that light, the costs of getting there, however large they may turn out to be, will be easier to trade for the benefits. But this is not to say that I think it will be easy to keep prices stable once we get there. On the contrary, I think it may be much more difficult to do so in the next 20 or 30 years than it has been in the past 20.

It seems to me that the economies of Canada and its trading partners face a new and serious threat. And, human nature being what it is, we tend to discount it. Respected scientists warn us that the consequences of global warming for future generations will be severe, and that we will have to begin making major changes in our life-styles very soon in order to avert much worse damage. It now seems likely, for instance, that we will have to switch fairly rapidly away from heavy reliance on the combustion of hydrocarbons in the production of energy. Market forces alone will not produce this result. Self-denial, through a combination of tax and regulatory measures, seems to be required on a massive scale. Although substitutes will undoubtedly come into use, there can be little doubt that the impact of these measures on productivity will be severe and negative. I am talking about a supply shock of a kind — a deliberate one, no doubt, but a much-debated, much-fought-over supply shock.

Unfortunately, when there have been serious difficulties on the supply side in the past, government has often been tolerant of inflation. The body politic naturally makes every effort to reduce its share of the burden of adjustment, and political leaders can easily imagine, at least for a while, that inflation may represent a relatively easy way to impose that adjustment on them.

Argentina's current difficulties are a lurid example of this sort of policy error. Even central bankers themselves, faced with new and unprecedented distortions of production relationships, may mistakenly advise monetary policies that result in inflation, counting on productivity expansion that never comes. Why, after all, has the wave of inflation that Canadians have borne during the past 20 years persisted so long? Partly, because the Bank of Canada has been committed to gradualism in its pursuit of renewed price stability. But also because Canadian governments have continued to apply one nostrum after another, under one political banner or another, hoping to call forth a renewal of productivity growth at the old rapid rate.

Supply-side measures — income tax cuts, development grants, research and development credits, megaproject financing, and a host of others — have proliferated. But none of these has been demonstrably very successful. Only very reluctantly and gradually have governments and central bankers taken the steps of fiscal and monetary restraint that are slowly beginning to restore stability both to the price level and to the state of the public debt.

When Chairman Alan Greenspan of the U.S. Federal Reserve System and Governor John Crow of the Bank of Canada point out that zero inflation is their target, I cannot imagine that they could choose any other. We may argue about the rate at which to approach it, and about the tightness of the band we should accept around it. But for a central bank deliberately to aim over the years at a rate of inflation that is anything but zero is an open invitation to lenders and borrowers to put little trust in the currency. I think that the greatest problem in maintaining price stability will be that, when the going gets tough, we will once again convince ourselves that some new nostrum will save the day for productivity, rather than biting down hard on the problem from the outset.

There is, however, a shining counterexample to my pessimistic appraisal: the way in which World War II was financed. From the outset, it was recognized that the war would require a massive diversion of resources from civilian demand, and that growing civilian liquidity would have to be impounded if it were not to result in roaring inflation. The combination of rationing and War Bonds did the trick, and inflation was kept down.

In any case, I do not fear that Governor Crow will shirk from his duty. What I fear is that the challenges he and his successors will face may prove, again, more difficult to manage than they can imagine. It is not that straying from price stability is likely to benefit anyone, politicians included, but simply that it may prove necessary in the coming years to adopt and maintain monetary measures that appear to most people to be overly restrictive, in order to keep prices reasonably stable. I hope that I will prove to be unduly pessimistic. We know, after all, that inflation is a man-made phenomenon.

If we meet global warming and other challenges with all our best resources, then measures necessary to maintain price stability will symbolize in an important way the integrity of the social contract, of which governments and central banks are the trustees. In any case, it is in this context that I favor an early return to price stability, and a watchful, unoptimistic commitment to maintaining it, however difficult and painful that may be.

From the Market's Eye

The papers contained in this volume cover the zero-inflation debate admirably. They display a profound understanding of the field, and I have no issue with their insights. As a participant in financial markets, rather than an academic, what can I reasonably contribute to this discussion?

One question that one might ask of a market participant is: What do you believe the market expects Canada's inflation rate to be in the coming years? If the market seems not to expect inflation to approach zero fairly soon, why not? Unfortunately, it is difficult to answer such questions. My job is to make judgments about market expectations, but I am not giving away a professional secret when I say that estimating expectations is a thankless task.

The Myopia of Market Expectations

Today's financial markets reflect the expectations and wealth constraints of literally millions of diverse transactors — some of whom are domestic, but far more of whom act from abroad, and each of whom faces different menus of assets from which to choose. Although professional investors all share to some degree in the same general flow of information about Canada, it is literally impossible to tease out of the structure of Canadian interest rates any reliable data about the expectations that are embedded in them.

Is there, indeed, such a thing as "market expectations" at all? It is impossible to tell who is the marginal transactor in the key Canadian financial markets at any time. Participants in financial markets, whether they act for themselves or as agents, form their expectations about future asset prices in highly unconscious and impressionistic ways, and over multiple horizons. In principle, every single coupon payment on a long-term bond has an expected rate of return associated with it in every investor's mind. But we all know by introspection that our brains do not work that way. We do indeed form expectations, but they are better represented by cloudlike, umbral shapes than by formal, precise structures.

Partly for this reason, I venture to think that events that are expected to happen in the far future, rather than soon, have greatly attenuated power to influence private behavior. Central banks and other government agencies that possess carefully developed models of the economy can elaborate zero-inflation targets for, say, four years out, and reasonable people may consider them to be reasonably credible given the reasonable economic assumptions that underly them. In my own experience, such targets are likely too far in the future to have much impact on private expectations or behavior.

Targets specified for three to twelve months in the future — particularly if they are set by agencies that have set and achieved such targets in the recent past — may have considerable ability to affect private expectations and behavior. But, I believe that the horizons relevant to financial-market behavior are primarily those of less than three months, while expectations about the longer run, being much more tenuous, have much less power to influence asset prices. In any case, those longer-run expectations seem to me to be strongly regressive, in the sense that they may reflect some sort of construction representing the cumulative experience of the past — influenced by the recent past, but changing only very slowly. As a result, they may be very resistant to the influence of central bank rhetoric about zero inflation.

Nonetheless, financial markets are always in motion, equilibrating expected returns in some aggregative, risk-adjusted sense across multiple horizons and multiple asset classes. Canadian financial markets are sufficiently liquid and sufficiently deep that they clearly exhibit high correlation with other financial markets abroad. Thus, the expectations that have primary significance for financial asset prices in Canada have largely to do with exchange rates. Again, since I assume that exchange-rate expectations are largely dominated by short-run considerations, the marketplace probably judges the Bank of Canada's management primarily by its actions and results with respect to interest rates and exchange rates over a relatively short period of the past. Therefore, if the short run is for one reason or another dominated by unexpected, noisy events, the Bank's rhetoric about the long run is of little avail.

I recognize that this does not really cause the Bank any lasting difficulty. It can always act in such a way as to produce a combination of short-term interest rates and the exchange rate that will continue to move the economy toward a desired trajectory with respect to monetary ease or demand pressure. But, while the Bank's actions and success in demonstrating its commitment may be fairly clearly perceived by those who articulate their views in public on these matters, the degree of "credibility" that markets assign to the Bank's commitment to zero inflation will likely be determined primarily by reference to actual inflation in the short run. That is, an episode of escalating inflation will probably lead bond prices to fall sharply even if it simply reflects temporary bad luck.

However, I am not looking a gift horse in the mouth. I do believe that it is extremely useful that the Bank has so clearly stated its intention to proceed toward price stability. The Bank's research papers and contributions to our knowledge of the processes whereby monetary policy is transmitted to the price level have been very helpful. This gratitude partly reflects simple professional interest, of course — candor on the Bank's part helps me to judge whether its policies are liable to be successful and, therefore, to recommend various courses of action to my clients. If the Bank were completely silent, it would not only make my life as a forecaster more difficult, but, more importantly, it would raise important questions of accountability to the electorate and to the public interest.

Stay on the Path to Zero Inflation

A different issue, but one that has occurred to me forcibly, is akin to David Laidler's comment in *Zero Inflation: The Goal of Price Stability* that some of the costs of approaching zero inflation have already been paid. I would go further and say that there is no time like the present to continue to move toward zero. Whether or not one might have recommended it at a different time and in a different place, moving toward zero — that is, opening up a gap between actual and potential gross domestic product (GDP) sufficient to put inflation under downward pressure — is now the only prudent policy by almost any reasonable standard, rather than a choice whose costs might be considered to outweigh its benefits.

I say this for two reasons. First, Canada's external balance is excessively in deficit and needs to be addressed by deliberate restraint of domestic demand. Second, the country's fiscal position is untenable and continues to require serious restraint in order to retrieve it. Both these points are familiar, so I will expand on them only briefly.

We are all aware that Canada had a record current-account deficit last year. Canadian saving has fallen far short of the amount needed to finance outlays on goods and services, so that we have called on foreign saving to an extraordinary degree. Admittedly, a considerable amount of the saving required has been used to finance a persistent boom in private investment outlays. There is obviously a *prima facie* case that these will prove to be justified by earning power in the future. However, the personal sector has also continued to accumulate debt, and has now reached a level of indebtedness never before seen relative to income. The demand for goods and services financed by credit — and, in particular, the demand to acquire housing, financed by residential mortgages — has continued to grow at double-digit rates in recent years, vastly outstripping income growth and, indeed, giving rise to serious questions of affordability.

If we are to see price stability in the near future, the economic slowdown required to produce it will undoubtedly bring shock and collapse to many families' ability to continue to service their debt. However, had we tried to put off this evil day by permissive monetary policy, it seems only too likely that the boom would by now have reached even more untenable heights, leading ultimately to an even more dramatic crash.

One dramatic result of Canada's unbalanced economic expansion of the past five years has been an overconcentration of growth in southern Ontario and, as a result, a huge increase in the demand for housing, which has much more than doubled the price of housing in that market. All of the symptoms of overpressure in Ontario suggest that what is needed is a stretch-out — a breathing space in the economic expansion — so that the physical supply of housing and other structures can respond and bring asset prices back down to more sustainable levels.

A combination of fiscal and monetary restraint working through interest rates to reduce this extraordinary asset demand has been fully warranted, and would have been so whatever level of inflation we had started from. Although many parts of the country have not suffered from overpressure, the national data suggest strongly that economic restraint at this time will serve the personal sector very well, both by permitting the supply of housing and infrastructure to catch up with demand, and by pricking the bubble of residential asset values before it becomes truly gargantuan.

A shift to a higher personal saving rate and/or a less aggressive rate of acquisition of physical assets on the part of the personal sector will serve to reduce our reliance on foreign saving. Especially when we consider the high level of real interest rates at which international saving flows are mobilized these days, it seems to me that there is a very strong case on this ground as well for restraint, even if the domestic case were not in itself compelling. Admittedly, in itself this does not imply that we should choose zero; it simply adds further reasons why the costs of approaching zero should be accepted.

The case for fiscal restraint is too well rehearsed by now for me to restate it. It is compelling in terms of stabilizing the ratio of the public debt to GDP alone. Canadians have dissaved through their federal government to an imprudent degree, and whatever one might think of their private saving behavior, the case is strong that the government should move to reduce its own dissaving as rapidly as possible. Of course, the high real interest rates that now characterize world capital markets only strengthen the case and its urgency.

In saying this, I am making no judgment about the desirability of expenditure programs at the federal or other levels of government. I see no overwhelming need for Canadian governments to reduce their program expenditures as such at this time. I simply suggest that we are financing the public sector, especially the federal government, to an imprudent and unjustified degree through the capital markets.

Canada's high real interest rates reflect, of course, not only the high level of rates that are paid by even the best risks internationally; they also appear to reflect a relatively high degree of exchange-rate risk. In my view, the Canadian dollar is indeed likely to lose value against the U.S. dollar over the next year or two, in the context of a weakening growth rate for the economies of Canada's combined trading partners and what seems likely to be a further decline in this country's terms of trade.

All these considerations suggest strongly that we would have little justification in attempting to pursue growth at a rate that would be consistent with a stable inflation rate. Rather, we should acknowledge the prudence of taking time out to reduce the growth of our domestic and foreign indebtedness, accepting that growth will thereby be reduced. Again, this is not in itself an argument for going all the way to price stability, but it does suggest that now is a good time for doing so.

Not How Far but How Fast?

I have only one other point to raise, in conjunction with the dynamics of the process. What is the appropriate rate at which to approach the target-inflation range? Should it be more or less gradual than we have so far observed?

First of all, I recognize that, for a host of reasons, we probably will not observe, over any given period of time and for any given index, the idealized trend rate of disinflation. All the reasons that have been so well described and discussed in the other papers in this volume mean that we must consider the Bank of Canada's pursuit of price stability to be a matter of constant reorientation to a dynamically changing path. Nonetheless, it is meaningful to consider whether, given our best abilities to model the processes involved, we should aim to attain the center of the target range over one year, two years, four years, or some considerably longer period of time.

I must confess that since I do not possess adequate modelling facilities, I do not have a good basis for judging the answer to the question. For instance, suppose I were to say that I would like us to wipe out inflation in one year. I would then have to admit that I do not know whether it is even possible to do so without creating such a dramatic cycle in employment and output that we would end up with a significant overshoot, negative inflation in the Consumer Price Index for a time, and a peak rate of unemployment much higher than would be required from a slower path. Suppose, on the other hand, I were to suggest a very relaxed approach to price stability — say, by disinflation of less than 0.5 percent per year on average. I am not sure that the policy would be distinguishable from no disinflation at all, and for the reasons mentioned above, I think it would be insufficient restraint.

I continue to think that public debate on these topics would be enriched considerably if someone would publicly explore, with the aid of a macro model similar to that used by the Bank, the dynamic consequences for employment, output, and prices of various policy options that are open to us in the next few years. Monetary and fiscal policies have dramatic implications for regional balance and for relative as well as absolute prices. I think we do ourselves no favors by limiting public discussions to overly simple, most-probable-case scenarios.

Forecasters of the Canadian economy who project beyond the next year or two generally seem to give very little credence to the Bank's ever achieving its target of price stability. Why is this the case? What do they know that the Bank does not? What does the Bank know that they do not? If their work simply reflects the regressive expectations that I referred to at the beginning of this essay, then it suggests a need for reform in forecasting methods. These are questions I can only raise; I would very much like to see the country move toward answers.

Part IV

An Alternative Monetary Policy

This part of the study examines alternative operating frameworks and objectives for Canadian monetary policy. Pierre Fortin contends that the time may now be ripe for a fixed exchange rate as an alternative to the zero-inflation target. Courchene presents the case for a more balanced macroeconomic policy, arguing that both the federal and provincial governments should play a greater role in the anti-inflation battle. Douglas D. Purvis adds a short comment in favor of the goals of current policy.

Can the Costs of an Anti-Inflation Policy Be Reduced?*

Pierre Fortin

> *The strategy of maintaining slack is not absurd. But it is inefficient. The pursuit of efficiency calls for a major effort by the economics profession to design better disinflationary policies.*
>
> — Arthur Okun[1]

> *The trick is to find a formula for mutual de-escalation which does not offend conceptions of relative equity.*
>
> — James Tobin[2]

> *Our objective in this country should be to do as well as the United States and perhaps a little better. We may not be able to hope to do very much better, but we are capable of doing much worse.*
>
> — Louis Rasminsky[3]

The Proposition

The authors of the C.D. Howe Institute's book, *Zero Inflation: The Goal of Price Stability*, come down to four main conclusions.

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[*] I would like to thank the participants in the C.D. Howe Institute's workshop on zero inflation, especially Tom Courchene and Doug Purvis, for their most helpful comments.

[1] Arthur M. Okun, "Efficient Disinflationary Policies," *American Economic Review* 68 (May 1978): 348–352.

[2] James Tobin, "Inflation and Unemployment," *American Economic Review* 62 (March 1972): 1–18.

[3] Canada, Parliament, Senate, *Proceedings of the Standing Committee on National Finance, No. 21, Eighteenth Proceedings on the Question of Growth, Employment and Price Stability*, Thursday, June 17, 1971.

First, they agree that, in itself, zero is probably the best level of inflation, and that the Bank of Canada should pursue the goal of price stability as rigorously as is practical. The relevant argument is carefully developed in Peter Howitt's detailed review of the costs of maintaining a positive rate of inflation.

Second, the authors acknowledge that to reduce inflation permanently below the current 5 percent level would involve important transition costs. These would mainly take the form of foregone production and temporarily higher unemployment resulting from the high interest rates and appreciation of the Canadian dollar that the required monetary restraint would entail. The authors consider, however, that the permanent benefits would be far greater than the transition costs — in other words, that the long-term gain would be worth the short-term pain.[4]

Third, they argue, however, that it would be best for the Bank of Canada to stop reducing inflation before full price stability is reached. My own summary of measurement issues in *Zero Inflation* concludes that the rate of increase of the Consumer Price Index (CPI) probably overestimates the true annual rate of inflation by as much as 1 percent. One can therefore consider that full price stability is achieved when the CPI inflation rate is around 1 percent. But the other authors go further. They believe that as the inflation rate decreases, the increasing marginal costs of reducing it even more come to exceed the decreasing marginal benefits of doing so, and that this likely occurs at a rate higher than 1 percent. This is, they argue, where the process should stop. They present this view as an honest opinion, since the relevant calculations are too uncertain to allow them really to prove their point. David Laidler would settle for something that would not exceed 2 percent. Howitt and Douglas Purvis do not commit themselves to any particular number, but they clearly have in mind a rate higher than 1 percent and lower than 4 percent.

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[4] According to Howitt's illustrative calculations, at a 5 percent inflation rate the marginal benefits from disinflation would exceed the marginal costs by a 26-to-1 margin.

Fourth, there is consensus among the authors that the approach to the final inflation rate — whatever it is — should be cautious, gradual, and not too harsh, for several reasons:

- the anti-inflationary effectiveness of higher unemployment could decrease as unemployment increases;[5]
- a sudden and large unemployment shock would more likely produce severe unemployment persistence than if the policy were carried out more slowly;[6]
- the lags in monetary policy's effects call for prudence on the part of the central bank; and
- people prefer to take the pain — which includes high interest rates and a high Canadian dollar — in smaller doses and to have it spread over a longer period.

Laidler, for example, states that the economy should be moved to the low-inflation target not instantly, but perhaps over the next two to three years.

A Three-Point Evaluative Summary

By way of a summary of the balance of this paper, I have three points to make about these conclusions.

Point One

I heartily agree that, abstracting from the costs of going there and staying there, the best rate of inflation is around 1 percent. The evidence on this proposition is as good as it can be in economic science, and Howitt does a very competent job in summarizing it.

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[5] That is, the unemployment-inflation tradeoff (the Phillips curve) could be nonlinear.

[6] That is, unemployment "hysteresis" effects could be larger if the approach was too harsh, as it was in 1981–82.

Point Two

I also agree that, as monetary restraint reduces inflation, a point is eventually reached where the costs of further disinflation exceed the additional benefits. In my view, however, this occurs at a level of inflation *above*, not below, 4 percent. In other words, not only do I concur with the view expressed by Robert Lucas and William Scarth in the present volume that the authors of *Zero Inflation* underestimate the marginal cost-benefit ratio of disinflation, but I argue that the ratio is even higher than Lucas and Scarth believe.

I present qualitative and quantitative evidence showing that the benefits of reducing inflation below the 4 percent rate through *unaided* monetary restraint are easily swamped by the extremely high costs of implementing that strategy. I raise the distinct possibility that it would take a permanent increase in unemployment to get only a temporary reduction in inflation — in other words, that Canadians would get long-term pain for short-term gain. The purely logical implication of this view is that the country would benefit from trading off a somewhat higher rate of inflation for a lower rate of unemployment. Moreover, I point out that the authors' favorite approach to further disinflation — gradualism — is not at all consistent with history. In the past 30 years, *every* single episode of inflation decline in Canada has followed either a credit crunch or wage and price controls. Gradualism has *never* worked.

Point Three

I am nevertheless not ready to settle for the conclusion that we should let inflation increase without trying something else. There must be a way of making the costs of monetary disinflation smaller; and if not, we should heed Okun's advice and invent one. Besides prevention, I consider six nonmutually exclusive routes toward more cost-effective inflation control: turning the fiscal-monetary policy mix toward tighter budgets and easier money; bringing provincial fiscal policies to address specific regional stabilization needs; investing in central bank credibility; imposing wage and price controls; building social consensus; and avoiding excessive exchange-rate volatility.

The first route aims at minimizing the damage done to future growth prospects by anti-inflation policy's excessive reliance on monetary, as opposed to fiscal, restraint. The second route is mainly helpful in redistributing the costs of disinflation efficiently and equitably across jurisdictions and regions. In contrast, the remaining four options try to reduce the current output and unemployment costs of inflation control. They are best viewed as attempts at solving the fundamental question of how to coordinate the mutual de-escalation of nominal wages and prices consistent with the monetary slowdown while minimizing the side-effects on relative wages and prices, and on real activity. Following Tobin —and Keynes before him — I stress that perceptions of equity play a key role in determining the success of any coordination mechanism.

Credibility, controls, and consensus — the three c's — could help the disinflation process whatever the inflation target. However, I am very pessimistic about the ability of a "credible" Bank of Canada to ease the costs of inflation reduction. There is no evidence that credibility works in labor and product markets, and the reasons why are easy to understand. Concerning wage and price controls, all available evidence strongly indicates that they were extraordinarily cost effective under the Anti-Inflation Board (AIB) of 1975–78. But it would be rash to enforce them too frequently, because they encroach on basic freedoms and because their marginal allocative costs are likely to increase with frequency and duration of use. Finally, there is little hope that Canada can soon emulate the degree of mutual trust and consensus between social partners that exists in such low-unemployment countries as Austria, Japan, Norway, and Sweden.

As a fallback position, I suggest that a 10 percent-wide target band for the Canadian-U.S. dollar exchange rate be established, down from the 25 percent-wide roller coaster of the 1980s. Deciding what equilibrium value of the exchange rate should be chosen as the midpoint of the band is not an obvious matter. But given the current-account deficit's present size (2 percent of gross domestic product — GDP), the current equilibrium Canadian-U.S. dollar exchange rate is almost certainly below 80 cents, and probably closer to 75 cents. The "fat peg" system I recommend would have Canada import the U.S. rate of inflation on average, just as in the fixed and quasi-fixed exchange-rate period of 1950–73. Canada would thus abandon independent pursuit of the goal of price stability. But this would arguably represent an improvement over the flexible exchange-rate period of 1973–90, during which Canadian inflation has been higher than U.S. inflation on average.

At the micro level, gauging the degree of firm competitiveness through direct comparisons of Canadian *versus* U.S. unit costs would become a more reliable operation. This is of particular strategic importance in the post-Free Trade Agreement transition period. At the macro level, the U.S. rate of inflation could become the widely understood, efficient, and fair benchmark that ought to be set for the tolerable rate of inflation in this country. The narrower target band would anchor currency-market expectations more firmly, which would by itself contribute to stabilizing nominal and real exchange rates, and to narrowing the average differential between Canadian and U.S. interest rates. But, at the same time, the band would continue to allow for some residual short-term flexibility in the face of terms-of-trade and other shocks.

The rest of the paper elaborates on the second and third points and provides the relevant empirical evidence. In the second section, I explain why I think the authors of *Zero Inflation* seriously underestimate the costs of relying on *unaided* monetary restraint to reduce and maintain the inflation rate below 4 percent. In the third section, I emphasize the key role federal and provincial fiscal policies can play in an anti-inflation strategy that is cost effective. I then go on to discuss why central bank credibility is unlikely to reduce the costs of disinflation, how effective the Canadian brand of wage and price controls was during the 1975–78 and could be in the future, and how far from social consensus Canada is likely to remain for some time to come. In the fifth section, I examine the rationale for, and implications of, the recommended 10 percent-wide target band for the Canadian-U.S. dollar exchange rate. The paper ends with a summary of the argument and offers a few concluding observations.

The Costs of Unaided Monetary Restraint Are Sharply Underestimated

The central point of this section is that Howitt's evaluation of the transition costs of reducing inflation below the 4–5 percent range through monetary restraint alone is much too optimistic. I argue that the underestimation of these costs is so severe that the opposite conclusion is logically warranted: with unemployment at 8 percent and inflation at 5 percent, the former is too high and the latter is too low.

Howitt first determines that the temporary unemployment cost of a 1 percent reduction in inflation is worth about 4.7 percent of a year's gross national product (GNP). This is the short-term pain. He then estimates that the annual benefit from the resulting inflation reduction is worth 1.875 percent of GNP. But since the latter effect is permanent, he capitalizes the latter figure at his favorite discount rate (1.5 percent) to obtain a present value of 125 percent of a year's GNP for the long-term gain. Since this is over 26 times as large as the cost, he concludes that we should proceed with the additional reduction of inflation.

However, as Laidler points out, the case hinges crucially on hysteresis effects being rather small. *Full hysteresis* means that the equilibrium, or "natural," unemployment rate is not a constant, but a variable that tracks the actual unemployment rate of, say, a year or two ago. Under full hysteresis, the inflation rate reacts to the change, not the level, of the unemployment rate. As unemployment increases, the inflation rate falls; but when unemployment stops increasing, the inflation rate stops falling and remains at the lower level only if the unemployment rate stabilizes at the higher level and does not return to its initial value, since the natural unemployment rate has meanwhile caught up with the new level of the actual rate.

In this way, a permanent reduction of the inflation rate requires a permanent, not a temporary, increase in the unemployment rate. The long-term gain entails long-term pain. The implication for the cost-benefit calculus is of major importance, since the cost-benefit ratio must then capitalize the unemployment cost as well as the disinflation gain at the same discount rate. The two discount factors thus cancel out. Sticking to Howitt's numbers, the cost of inflation reduction (4.7 percent of GNP) now exceeds the gain (1.875 percent) by a 2.5-to-1 margin. The purely logical conclusion is that the right thing to do is not to reduce, but to raise, the inflation rate and get the benefit of the resulting lower unemployment rate. Indeed, the same logic leads to the further conclusion that unemployment can be reduced permanently at the cost of a finite increase, not a permanent acceleration, in the inflation rate.

Empirical Evidence of Large Hysteresis Effects

What evidence is there that hysteresis effects are large in Canada? The broad facts of the 1980s seem at least consistent with the insensitivity of inflation to a high unemployment level. As Howitt notes, after the rapid 1982–83 wage deceleration following the deep recession and financial crisis of 1981–82, the national unemployment rate averaged more than 9 percent over the 1984–89 period. Yet there was no tendency for the inflation rate to come down further, a phenomenon which is also painfully familiar in Europe. Actually, recent U.S. experience is similarly consistent with the hysteresis story: the 5.3 percent unemployment rate there in 1989 did not trigger any inflation scare. It is as if inflation reacts to the change, not the level, of unemployment.[7]

Evidence in favor of full hysteresis begins in Figure 1, which reminds us that, in Canada, *all* instances of wage deceleration — a standard measure of changes in "core" inflation — since 1958 have followed a credit crunch (whether or not accompanied by a recession) or wage and price controls (as in 1977–78). This should be extremely troublesome for inflation fighters and for the authors of *Zero Inflation*, because the message is clear: the approach they recommend for further inflation reduction — namely, caution and gradualism — has never worked in the past 30 years. A big financial shock, and perhaps a recession, will be required.

The link between this observation and hysteresis is the following. Once the effects of credit crunches and controls are accounted for, there remains no significant correlation between changes in wage trends and unemployment *levels*. Instead, it is the correlation with *changes* in unemployment (from two years earlier) that is high (0.62) and significant.[8] These results suggest that cost-benefit calculations must take account of

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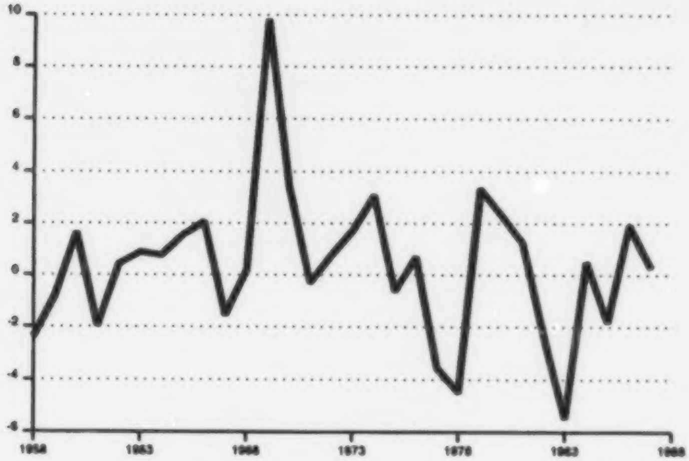
[7] There must be an absolute minimum unemployment level below which prices would really start to accelerate quickly, but it is undoubtedly lower than anybody thought earlier.

[8] I have made this calculation in Pierre Fortin, "Credit Crunches and Wage Dynamics: A Revision of the Canadian Phillips Curve, 1957–1987" (Paper presented at the Third Annual Conference of the Canadian Macro Study Group, Queen's University, Kingston, Ont., November 1989).

Figure 1
The Growth Rate of Total Compensation per Manhour in the Canadian Private Sector, 1958–87
(annual percentage change)



Source: Statistics Canada, *Aggregate Productivity Measures*, Cat. no. 15-204, various issues.

hysteresis effects, in which case, as I have mentioned, the cost-benefit ratio turns favorable to trading off a finite increase in the inflation rate for a permanent reduction in the unemployment rate. For example, the standard estimate of 0.5 for the slope of the short-run tradeoff between inflation and unemployment would allow unemployment to be cut by, say, 2 percent at the cost of a 1 percent increase in the inflation rate.

There is more. Returning to the "wage-floor" hypothesis developed by James Tobin 18 years ago,[9] Howitt mentions that there could be more resistance to a wage cut at a time of stable or falling prices than there would be to a wage increase that had the same real-wage effect at a time of rising prices. There is close to unanimity among employers that cutting wages by 5 percent when inflation is zero is viewed by employees as several orders of magnitude more unfair and is much more stiffly resisted than raising wages by only 5 percent when inflation is 10 percent.[10] Recent tests I have performed with Canadian data provide empirical support for this common-sense observation, too: in periods when the inflation rate was below 5 percent, such as 1958–64 and 1984–87, the propensity of current wage growth to match recent wage and price increases, which is normally about 100 percent, was significantly weaker.[11]

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[9] James Tobin, "Inflation and Unemployment."

The combination of hysteresis and increased wage resistance at low levels of inflation is a poisonous cocktail. It brings the cost-benefit ratio of further disinflation up to 35 to 1, compared to 2.5 to 1 when hysteresis alone is present.[12] Even

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[10] See Daniel Kaheman, Jack L. Knetsch, and Richard Thaler, "Fairness as a Constraint on Profit Seeking: Entitlements in the Market," *American Economic Review* 76 (September 1986): 728–741; and Alan S. Blinder and Don H. Choi, *A Shred of Evidence on Theories of Wage Stickiness*, NBER Working Paper 3105 (Cambridge, Mass.: National Bureau of Economic Research, September 1989). From this standpoint, zero inflation is obviously easier to achieve in a country like Japan, where productivity growth is so fast that wages can increase by 3 to 5 percent per year even if the price level is stable.

[11] It was only 80 percent. See Fortin, "Credit Crunches and Wage Dynamics."

[12] This can be seen as follows. Write the Phillips tradeoff as:

$$i = a i_{-1} - b\,[(1 - h)\,u + h\,(u - u_{-1})] + c,$$

where i and i_{-1} are this year's and last year's inflation rates, respectively, u and u_{-1} are this year's and last year's unemployment rates, respectively, and a, b, h, and c are positive constants with a and h not exceeding 1. Assume further that the aggregate welfare loss from inflation and unemployment is equal to the present value of annual current and future losses of the form $k_i i + k_u u$, where k_i and k_u are the positive marginal costs of inflation and unemployment on an annual GNP scale. The relevant discount rate is d. Then, it can be shown that the marginal cost-benefit ratio that corresponds to a one-period unit increase in current u is $r = (k_u / b k_i)\,(d + 1 - a) / (d + 1 - h)$. The marginal increase in u is socially profitable if r is less than 1. Let us follow Howitt and assume that $k_u = 2$ percent of GNP...

the Jarrett-Selody estimate of the net benefit of inflation reduction is then exceeded by the very high costs of the operation.[13] Moreover, under the full-hysteresis-wage-floor view, permanent inflation reductions can come only at the cost of a permanently rising rate of unemployment. Put the other way around, a permanent increase in the rate of unemployment can buy only a temporary decrease in the rate of inflation. This is now long-term pain for short-term gain. Actually, the startling implication is that the long-run Phillips tradeoff could be horizontal at a rate of inflation somewhere below 5 percent. There would be a kind of low-level "natural rate of inflation."[14]

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12 - *cont'd.*

...$k_l = 1.875$ percent of GNP, $b = 0.43$, and $d = 1.5$ percent per year. With no hysteresis ($h = 0$) and no wage floor ($a = 1$), Howitt gets $r = 0.037$: it's a go. Full hysteresis ($h = 1$) and no wage floor ($a = 1$) yields $r = 2.5$: it's a no. With full hysteresis ($h = 1$) and a wage floor reducing the value of a to, say, 0.8, a ratio $r = 35.6$ yields a bigger no.

[13] J. Peter Jarrett and Jack G. Selody, "The Productivity-Inflation Nexus in Canada, 1963–79," *Review of Economics and Statistics* 64 (August 1982): 361–367. They estimate that each variation of 1 percent in the inflation rate would change the productivity growth rate by 0.3 percent in the opposite direction. One implication of this is that the reduction of inflation from 12 percent in 1980–81 to 4 percent in 1983 and after should have raised the productivity growth rate by 2.4 percentage points annually in the 1980s. The fact that no improvement of such a magnitude occurred casts doubt on the validity of the estimate. Howitt is understandably reluctant to put too much emphasis on it.

[14] To see this, set $h = 1$ and a smaller than 1 in the Phillips tradeoff of footnote 11. Then, steady long-run inflation and unemployment mean $i = i_{-1}$ and $u = u_{-1}$, from which one draws the "natural" rate of inflation $i_n = c / (1 - a)$. A rough-hand first guess based on Fortin, "Credit Crunches and Wage Dynamics" is that $c = 1$ percent and $a = 0.8$, giving a value of precisely 5 percent for i_n. The rate i_n is natural in the sense that the central bank could not establish a permanently lower rate of inflation through slower money growth without having to accept a permanently rising rate of unemployment.

Other Unemployment Costs

The Human Costs

The calculations so far have not taken into account the *human* costs of unemployment. These could be substantial. A 1981 survey conducted in Quebec by Diane Bellemare and Lise Poulin-Simon has shown that most people regard the human factor as vastly more important than the private financial costs.[15] Another study finds that, holding all personal characteristics — including the initial health status — constant, the average mental health of a 1985–86 longitudinal sample of Montreal workers deteriorated significantly after they became unemployed.[16] Now, I do not know how to measure this on a GNP scale, but if the human costs were only worth 50 percent of the economic costs, all cost-benefit ratios reported so far would increase proportionally.

Delaying the Benefits of Free Trade

Next, what is the cost of postponing the productivity benefits of the Free Trade Agreement for, say, five years, as restrictive monetary policy produces very high interest rates and a sharp appreciation of the Canadian-U.S. dollar exchange rate, which then temporarily destroys the competitiveness of Canadian firms and forces them to delay the related capital expenditures? If the one-time permanent annual productivity gain from the Agreement is 3 percent, the loss amounts to another 15 percent of a year's GNP. This is under the optimistic assumption that the Agreement's dismal initial performance creates no output hysteresis effect and does not turn Canadians into staunch anti-U.S. protectionists for another decade, with all the serious implications this would have for trade policy.

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[15] Diane Bellemare and Lise Poulin-Simon, *Le plein emploi: pourquoi?* (Montréal: Presses de l'Université du Québec, 1983).

[16] Francine Mayer and Paul-Martel Roy, *La relation chômage-santé: une étude longitudinale*, Cahier 8814L (Montréal: Université du Québec à Montréal, Laboratoire de recherche sur l'emploi, la répartition et la sécurité du revenu, 1988).

Political Costs

Finally, what is the long-term political cost for Canadian unity of starting an economic slowdown or a recession in all provinces when the unemployment rate is 5 percent in one overheated region and 9 percent in the rest of the country? Richard Lipsey and Purvis present many reasonable technical arguments about the irrelevance of the regional issue to anti-inflation monetary policy. Should we not, however, acknowledge the fact that the policy would increase divisiveness in a country that is already playing a very risky game with its future? How large is this cost on a GNP scale?

I end this comment by recognizing that part of the evidence I have relied on is, for the time being, preliminary and suggestive rather than definitive and entirely conclusive. But at best I am right, and at worst I have shown that the cost-benefit calculations on which the authors of *Zero Inflation* base their conclusions rest on very optimistic and fragile assumptions that need to be questioned.

The Stabilization Policy Mix Must Be Made More Efficient

The message I want to convey is not that one should be casual about containing and reducing inflation. Howitt's estimate of the marginal cost of inflation and Laidler's reminder on centuries of monetary wisdom are convincing enough. Rather, my line is that, as academics and practical policymakers, we should think much more seriously about alternative anti-inflation strategies and institutions than we have in the past 25 years. It is wrong to leave the task of fighting inflation to the central bank alone, because monetary policy is too blunt a policy instrument. We ought to diversify our policy portfolio.

Limits to Structural Reforms

Reducing the costs of inflation control is no small contract. I will not propose any definitive solution to the unemployment-inflation quandary here. The natural first step is prevention — avoiding unnecessary inflation shocks. Public-sector wage settlements, administered price policy, payroll and sales tax policies, and minimum-wage and other price-support regulations should be closely monitored for their inflationary impacts. The presence of hysteresis effects makes this task even more important than we thought earlier.

We should also continue implementing the standard list of classical reforms that can make the labor and product markets more competitive, more flexible and adaptable, and more responsive to slack. This includes breaking up excessive concentrations of market power, deregulating agricultural, housing, and other markets, going for even freer trade, encouraging labor mobility and retraining, providing tax incentives for profit sharing, and reforming unemployment insurance and public assistance. Some reduction in structural unemployment and steepening of the Phillips curve will follow — just the right things to hope for.

However, progress in reducing the costs of inflation control along these lines has been frustratingly slow in the past. It is likely to remain so in the future. There are economic, social, and political limits to what one can do on this front. The impact on the Phillips tradeoff of even the most effective classical reforms seems to be of the order of a few tenths of a percentage point of unemployment spread over a number of years,[17] while the inflation problem is often big and urgent and puts several percentage points of unemployment in the balance. Even in Margaret Thatcher's Britain, the short-run unemployment-inflation tradeoff today remains very unfavorable: the unemployment rate has come down from 12 to 6 percent since 1986, but the inflation rate has increased from 4 to 8 percent.

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[17] The most recent example is the proposed reform of the *Unemployment Insurance Act*. My ballpark estimate is that it could reduce structural unemployment by about 0.4 of a percentage point over the next two years.

Back to Basic Macroeconomic Policy

Better anti-inflation policy, therefore, requires that macroeconomic stabilization policy be improved. In this section, I limit considerations to aggregate-demand management, and address the question of fiscal-monetary and federal-provincial policy coordination. I shall add only a few remarks to the treatment of the relevant issues that is very competently provided by Purvis in *Zero Inflation* and by Tom Courchene in the present volume.

I simply want to repeat their emphasis on the importance of reorienting the fiscal-monetary policy mix toward tighter budgets and easier money, and of bringing provincial fiscal policies to address specific regional stabilization needs. The first recommendation aims at minimizing the damage done to future growth prospects by the excessive reliance of anti-inflation policy on monetary, as opposed to fiscal, restraint. The second route is mainly helpful in redistributing the costs of disinflation efficiently and equitably across jurisdictions and regions.

Purvis is right to stress that, for any given overall degree of restriction, the current bent of the policy mix in Canada toward tight money and large fiscal deficits hits investment (through high interest rates) and net exports (through appreciation of the Canadian dollar) especially hard relative to consumption. By retarding capital formation and increasing Canada's foreign indebtedness, the policy mix is thus much more detrimental than is necessary to future income growth prospects.[18] This excessive retardation of income growth must be added to current output and employment losses — as I have done above with emphasis on the productivity gains expected from the Free Trade Agreement — when calculating the costs of inflation reduction. A cost-conscious anti-inflation strategy should turn the monetary-fiscal mix upside down. Fortunately, the 1989 and 1990 federal budgets brought considerable progress on this front. Even if the federal debt keeps increasing, its size relative to trend GNP has now about reached a maximum and is likely to begin to decline within a year.[19] It will nevertheless be too late to avoid the excessive costs of the current bout of monetary restraint.

I am also in full agreement with Courchene, who argues in this volume that a more serious involvement of the provinces in stabilization policy would help reduce the costs of inflation control, perhaps quite appreciably.[20] His view is consistent with three common-sense principles:

- *The efficient-diversification principle*: Since there are increasing marginal costs in the use of each of Canada's 11 fiscal instruments, any given degree of national fiscal restriction will be less costly to apply if it is spread across jurisdictions.
- *The efficient-task-assignment principle*: Since the marginal costs of inflation and unemployment are increasing with the levels of these two evils, provincial fiscal policies could be

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[18] For a perceptive review of the economic consequences of high public debt, see Neil Bruce and Douglas D. Purvis, "Consequences of Government Deficits," in *Fiscal and Monetary Policy*, Collected Research Studies of the Royal Commission on the Economic Union and Development Prospects for Canada 21, John Sargent, Research Coordinator (Toronto: University of Toronto Press, 1986), chapter 2.

[19] The federal debt is currently worth 55 percent of GDP on public accounts, and 40 percent on national accounts.

[20] The issues are competently reviewed by Yves Rabeau, "Regional Stabilization in Canada," in *Fiscal and Monetary Policy*, chapter 5.

relied on to add to federal fiscal restriction in regions where inflation is higher and unemployment lower — in Ontario, for example — and to mitigate it elsewhere in the country. Overall tightness would be efficiently redistributed where it is needed most.

- *The efficient-regional-multiplier principle*: The income multiplier effects of provincial fiscal policies are regionally sizable, and provincial administrations can be competently associated with the federal government in implementing the national stabilization policy.[21]

The choice of the monetary-fiscal policy mix determines the relative incidence of demand restraint on growth-oriented investment and net exports as opposed to current consumption. The choice of the federal-provincial policy mix determines the regional distribution of restraint. In the rest of the paper, I will instead examine the available options for reducing the current output and unemployment costs of inflation control.

Can Wage and Price De-escalation Be Efficiently Coordinated?

In this section, I assess the effectiveness of three routes toward inflation control that have been frequently advocated by academics and policymakers: investing in the credibility of the central bank, imposing wage and price controls, and building social consensus. Then, in the next section, I consider a fourth route: stabilizing the exchange rate between the Canadian and U.S. dollars within strict limits. In this case, Canada would import the U.S. inflation rate on average, and would be able to achieve price stability only if the United States were successful in this area.

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[21] The diversification principle is due to Henri Theil, *Economic Forecasts and Policy*, 2nd ed. (Amsterdam: North-Holland, 1961); the assignment principle was first expounded by Robert A. Mundell, "The Appropriate Use of Monetary and Fiscal Policy for Internal and External Stability," in his *International Economics* (New York: Macmillan, 1968), chapter 16. I have reviewed the evidence on the size of regional income multipliers and on provincial involvement in stabilization policy in Pierre Fortin, *Provincial Involvement in Regulating the Business Cycle*, Economic Council of Canada Discussion Paper 213 (Ottawa: Economic Council of Canada, February 1982). The principle was endorsed by the Council in its consensus report, *Financing Confederation* (Ottawa: Supply and Services Canada, 1982).

The Three C's

Credibility, controls, and consensus — the three c's — are best viewed as attempts at solving the fundamental question of *how to coordinate the mutual de-escalation of nominal wages and prices consistent with the monetary slowdown while minimizing the side effects on relative wages and prices and on real activity.*

The consistency with monetary deceleration is crucial because no reduction of the inflation rate, however initially engineered, can persist if it is not ratified by the monetary authorities. To see this, consider the standard equation that expresses the quantity theory of money:

$$M + V = P + Q\,,$$

where M is the annual percentage change in the money stock (however defined), V is its corresponding velocity of circulation, P is the general price level, and Q is real GNP.

Restrictive demand management begins with the left-hand side of the equation. Velocity-adjusted money growth ($M + V$) slows down, and this translates *via* the equality into a deceleration of nominal GNP growth ($P + Q$). Under tight money, $M + V$ declines, because M falls and V increases by less. Under tight budgets, $M + V$ declines, because V alone falls. A growth-protecting monetary-fiscal mix minimizes the increase in interest rates, and therefore in V, while reducing M. The basic problem with demand-side restriction is that the reduction in nominal growth initially falls disproportionately on output, Q, and only slightly on prices, P. The estimated proportions can be as high as 4 or 5 to 1.[22]

The main difficulty here seems to be that economic activity in modern economies is decentralized, and that nominal wage and price adjustments occur at long, discrete intervals and in staggered fashion. The problem is one of the frequency and timing of wage and price decisions and contracts. We have one big coordination problem. If we could somehow get around this coordination difficulty, as soon as economic agents realize that the central bank is tightening they would reduce all their wages and prices proportionately, immediately, and in step. The nominal impact would fall 100 percent on P, real economic activity, Q, would be totally unaffected, and income distribution would also be unaffected.

Instead, what we observe in the short run is that — since so many wages and prices are fixed — the quantities produced, relative wages and prices, and income distribution bear the brunt of the monetary shock. Higher interest rates and exchange rates reduce demand, production falls, unemployment increases, and wages and prices follow slowly in a protracted and painful sequence marked by much leap-frogging. The opening quote by Tobin focuses attention on the problem of wage coordination. It makes the crucial point that, to be successful, any solution has to avoid offending conceptions of relative equity: the impact on wages relative to other wages and relative to profits must be minimized.

Central Bank Credibility and the Prisoner's Dilemma

"Credibility" has been the *leitmotiv* of the operations of many central bankers, including those at the Bank of Canada, since the beginning of the 1980s. Like Paul Volcker — who, as Chairman of the U.S. Federal Reserve, epitomized the attitude in the early part of that decade — they have tried to build their reputations as tough guys who will exert their anti-inflation muscles as long as the monster has not been tamed. They announce clearly their firm commitment to the anti-inflation strategy, and they try to abide by it come what may.

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[22] If the slope of the Phillips curve is b and the Okun coefficient is k, then the fall in output as a fraction of the total nominal decline equals $1 / (1 + b/k)$. For instance, if $b = 0.5$ and $k = 2$, then output catches 80 percent of the impact.

The idea was formalized by William Fellner in 1976: If wage and price setters become convinced that the central bank will not let them rest until inflation declines, they will begin to anticipate the inflation reduction and adjust their wages and prices accordingly without experiencing as much falling sales or increased unemployment as they would otherwise have to. Central bank credibility is viewed as the polar star that increases the degree of wage and price coordination during disinflation and that contributes to reducing its unemployment cost. In terms of the quantity-theory-of-money equation, if credibility worked, then any reduction in $P + Q$ generated by a decline in $M + V$ would fall more on P and less on Q.

Credibility is an important idea. It would be a godsend if it worked. But does it? There is no doubt that it plays a key role in financial and currency markets. These markets behave very much like schools of fish. They react immediately and in step to central bank actions, which they try to anticipate. In turn, the recent and prospective behavior of the markets is always an extremely important consideration in the central bank's decisionmaking process. The central bank and the markets are playing a game one against the other.

However, the relevance of central bank credibility for labor and product markets is an entirely different matter, because these markets are characterized by decentralized, overlapping, emulative, and long-term wage and price contracts. Wage earners would like to believe the polar star, but they do not know whether the announced inflation reduction will materialize. It seems that participants in labor and product markets are very reluctant to believe what governments and central banks tell them. They believe only what they see, and rightly so. For example, in the three years since the Bank of Canada announced that it was determined to contain rising inflationary pressures, and then that it was aiming for full price stability, inflation has accelerated from 3.5 to 5.5 percent!

More importantly, it does not really matter to wage earners whether the announced inflation reduction materializes or not, because they know that under all circumstances virtue will be punished and egoism will be rewarded. If one wage earner is virtuous and refrains from inflationary behavior, then another is simply provided with an opportunity to improve his or her relative position by demanding increased wages. With the inflation the first earner creates, the second will lose purchasing power, and the first will gain absolutely and relative to the second. If the second earner inflates, then the best decision of the first is again to inflate, this time to avoid being left behind. Whether the central bank honors its anti-inflation commitment matters little to the game players. Clearly, they either get inflation or the unemployment needed to suppress it. But in a decentralized market economy, each individual player reaps the full benefit of his or her inflationary behavior and bears only a negligible fraction of its costs, which are imposed on the entire society.[23] So the egoistic, inflationary strategy is universally dominant. This is a classic "prisoner's dilemma," which is known to yield the inferior outcome. Everyone would benefit from everyone else's being virtuous, but no one wants to be the first to try virtue.

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[23] The parallel with polluting behavior should be obvious. Comparing inflation with pollution was the basis for various "incentive-based incomes policies" — tax schemes and inflation permits, for example — advocated a few years ago by several economists, including David Colander, Abba Lerner, Sidney Weintraub, and Henry Wallich. An introduction to these proposals can be found in W. Craig Riddell, *Dealing with Inflation and Unemployment in Canada*, Collected Research Studies of the Royal Commission on the Economic Union and Development Prospects for Canada 25 (Toronto: University of Toronto Press, 1986). They have raised little interest so far, mainly because they create a new set of administrative, efficiency, and equity problems.

Therefore, it is not surprising to find that the credibility view does not have much empirical evidence in its favor. In the United States, Volcker's presumably highly credible monetary policy was not clearly accompanied by lower costs of inflation reduction. From 1981 to 1985, inflation decreased by about 7 percentage points and required about 14 point-years of cumulative unemployment, yielding just the "right" order of magnitude (0.5) for the slope of the Phillips curve tradeoff.[24] For the equally credible disinflation period in Canada, the implicit slope of the Phillips curve calculated by Howitt is 0.43.[25] Contrary to Purvis and Laidler, Howitt remains skeptical about the validity of the credibility argument, which I think is the more prudent attitude.

It is, of course, always possible to get around the evidence and argue that the very fact that the costs of the disinflation experiment were not smaller than usual is by itself proof that the U.S. and Canadian monetary policies of the time were not credible. But, at worst, this argument is circular reasoning. At best, it does not allow the truth of the credibility proposition to be really tested, implying that it is not a scientific statement.

If credibility or reputation building does not work, how is the economy to be freed from the inferior, noncooperative trap opened by demand restraint? How is virtue to be enforced? Two possible answers are: by law, or by social custom. In the first case, we have wage and price controls; in the second, consensus-based institutions. The difference with the credibility strategy is easy to grasp. Under the latter, the attack against inflation is still initiated by monetary policy on the left-hand side of the quantity equation. Controls and consensus start instead from the right-hand side. They first try to shock wage and price inflation down directly without affecting real economic activity. They then count on monetary policy to ratify the shock downward from the left-hand side and to make sure that the new equilibrium with lower inflation and steady real growth becomes permanent.

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[24] See Benjamin M. Friedman, "Lessons on Monetary Policy from the 1980s," *Journal of Economic Perspectives* 2 (Summer 1988): 51–72.

[25] The unemployment cost of 4.7 percent of GNP that Howitt calculates per percentage point of inflation reduction in the early 1980s must equal the ratio between the Okun coefficient (2.0) and the slope of the Phillips curve. The latter, therefore, equals 2 / 4.7 = 0.43.

The Effectiveness of Wage and Price Controls à la canadienne

Success in coordinating the mutual de-escalation of wages and prices requires that cheating be punished and fairness guaranteed. This seems to be the major reason why the Canadian controls program of the 1975–78 period was so much more effective than the U.S. program of 1971–74. In their 1982 study of this Canadian success story, Clarence Barber and John McCallum identified seven key ingredients: consistent rules stated in advance, effective wage guidelines, appropriate fiscal and monetary restraint, wage/wage equity, wage/profit equity, minimum resource misallocation, and the provision of a role for collective bargaining.[26] On each of them, the Canadian program was deemed vastly superior to its U.S. predecessor.

Controls under the AIB were particularly cost effective in wrestling down inflation. The ten available empirical studies of the experiment recently surveyed by McCallum generally estimate that controls produced a permanent, money-supply-accommodated inflation cut of between 4 and 6 percentage points with no evidence of a post-controls "bubble effect."[27] The administrative costs of the program were about $100 million in 1978 dollars. Inflating this figure to $500 million to allow for private compliance costs and the possible temporary distortion of resource allocation would seem to me to encompass all reasonable cost estimates. This would put the bill at 0.05 percent of 1978 GNP per percentage point of inflation reduction. Using Howitt's estimate of the permanent marginal benefit of lower inflation (125 percent of GNP), the result is a marginal cost-benefit ratio of 1/2,500. By comparison, monetary restraint without controls was 94 times less cost effective (4.7 / 0.05 = 94) according to Howitt's numbers, and 6,250 times less cost effective if full hysteresis is assumed (2.5 / [1/2,500] = 6,250).

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[26] Clarence Barber and John McCallum, *Controlling Inflation* (Toronto: Canadian Institute for Economic Policy, 1982), chapter 2.

[27] John McCallum, "Incomes Policies in a North American Setting" (Paper presented at the Conference on Markets, Institutions, and Cooperation, Venice, October 1988).

This favorable assessment of controls sidesteps the fact that they are a basic encroachment on the freedom of buyers and sellers to arrive at mutually agreed-on contracts. Also, the marginal allocative costs of controls could rise appreciably with frequency and duration of use. However, there are two important lessons to learn from the AIB success. First, Canada was able to respond to the basic challenge: it found a workable formula for mutual de-escalation of wages and prices that solved the coordination problem and that was perceived as equitable.[28] I interpret this as indirect evidence that coordination with fairness *is* the central problem in the first place. Second, although I believe that this sort of anti-inflation medicine should not be applied too frequently, I think we should nevertheless remember how extraordinarily cost effective temporary controls can be when compared with unaided monetary restraint. For this reason, we should keep controls in our toolkit, in case inflation rises to high levels again and we have no acceptable alternative.

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[28] Public opinion was consistently favorable to the AIB program. Moreover, in the 1981–82 period, polls indicated that Canadians favored a return to controls by a margin of 2 to 1.

The Mirage of Social Consensus in Canada

Can Canada mimic through some other means the AIB process and repeat its success, but without its totalitarian mode? I doubt it. Several authors have underlined the ability of a small group of "corporatist" or consensus-based countries, such as Austria, Japan, Norway, Sweden, or pre-1980 West Germany, to maintain low unemployment rates even in episodes of successful disinflation.[29] These countries seem to have a unique and powerful commitment to full employment; a unique situation of mutual trust between labor and business; and unique centralized and/or synchronized labor-market institutions, where the macroeconomic implications of microeconomic wage and price decisions are internalized, and where general wage and price trends are coordinated at the national level. Such countries have found practical solutions to the prisoner's dilemma through social customs and institutions.

Canada, on the contrary, seems several galaxies away from achieving social consensus. There is no obvious national commitment to full employment. Canadians lack the strong sense of community shared by the countries mentioned above. And, at least as measured by the intensity of strike and lockout activity, recent improvements still leave Canadian industrial relations among the worst of all the industrial countries. Social consensus seems out of reach in Canada, except perhaps in times of perceived national emergency.

I am thus led to the pessimistic conclusion that there is currently no easy means of reducing the pain of lowering inflation to zero in Canada. The credibility game is of doubtful usefulness for labor and product markets. Controls seem pretty efficient, but one hesitates to recommend totalitarianism as a way of life. Social consensus is for now the antithesis of the Canadian practice of industrial relations. We do not know yet how to implement the required mutual de-escalation of wages and prices with minimal side effects on relative wages and prices, real activity, and economic freedom.

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[29] See, for instance, John McCallum, "Inflation and Social Consensus in the Seventies," *Economic Journal* 93 (December 1983): 784-805; and Diane Bellemare and Lise Poulin-Simon, *Le défi du plein emploi* (Montréal: Éditions Saint-Martin, 1986).

We Should Put an End to the Canadian Dollar Roller Coaster

What practical alternative is there? My provisional answer would be to have market incentives work better. The idea would be to have the pursuit of international competitiveness at the micro and macro levels operate to anchor Canadian wage and price norms to U.S. wage and price performance and to provide the sought-for coordinating mechanism.

The basic principle that, in the new global economy, Canadians have to become and remain internationally competitive, or we are economically dead, has made striking progress in all parts of society in recent years. An important subgroup of firms and unions has understood this concept for years, but it has only very recently become a household word. If belief in it is held strongly enough, it can not only encourage the drive for higher productivity and cost control at the micro level, but also help to impose on wages and profits the nominal discipline required by the price stability objective at the macro level.

Now that in all Canadian provinces over half of total production is exposed to extra-provincial competition, comparisons between domestic and foreign (largely U.S.) unit labor and capital costs are increasingly perceived as crucial for survival and progress, and important for wage and price decisions.[30] There are plenty of examples of firms and unions that were hopelessly antagonistic a few years back and that are now engaged in at least partial cooperation to forestall competition from imports or to encourage sales in foreign markets. Industrial relations are no longer purely bilateral; they have become trilateral. Although there is still a long way to go, labor and management now seem to spend relatively less time fighting each other and more time fighting the common enemy from outside.

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[30] In 1975, the Economic Council of Canada suggested that indexes of competitiveness should play a greater role in wage and price decisions and, in effect, recommended that the federal government widely publicize wage and price indicators on that basis. At about the same time, the...

The widespread business outrage against current Bank of Canada policy also stems very much from considerations of competitiveness. At the very instant the Free Trade Agreement begins to take effect and they are being told to be competitive and to reconvert through massive investment, business people see the Bank pulling the rug out from under their feet by letting the Canadian-U.S. dollar exchange rate appreciate sharply and the real cost of funds shoot up relative to the United States. While Howitt and Purvis rightly emphasize that we have been recently witnessing an Agreement-related investment boom, there are numerous instances of Agreement-induced capital expenditure projects that have been delayed or killed by the very high value of the Canadian dollar. If relative unit labor costs in manufacturing are taken as a standard, Canadian industry in 1989 was about 20 percent less competitive relative to its U.S. counterpart than it was on average in the quarter-century before 1986.[31]

The point I am getting at is that the excessive volatility of the nominal exchange rate of the Canadian dollar is unduly

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...Council perceptively advocated free trade with the United States. See Economic Council of Canada, *Economic Targets and Social Indicators: Eleventh Annual Review* (Ottawa: Supply and Services Canada, 1974), p. 163; and idem, *Looking Outward: A New Trade Strategy for Canada* (Ottawa: Supply and Services Canada, 1975).

[31] United States, Bureau of Labor Statistics, "International Comparisons of Manufacturing Productivity and Labor Cost Trends," *News*, USDL 89-322, June 1989, p. 22.

restricting the useful role that measures of competitiveness or the real exchange rate would normally play in wage and price setting and investment decisions.[32] If the dollar is too low, wage and price setters are lured into nonsensical inflationary behavior, and capital spenders let anything go. If the dollar is too high, wage and price setters become protectionists, and capital spenders forego profitable long-term investment opportunities. It is no surprise that the tide of Canadian opinion has become increasingly protectionist and critical of the Agreement since it was signed. The allocative and macroeconomic costs of too much exchange-rate volatility can become extremely serious over time, because an important market signal — the real exchange rate — is blurred and misleads economic agents into adopting the wrong attitudes and taking the wrong decisions.

Exchange rates in general, and that between the Canadian and U.S. dollars in particular, should move from time to time. But they are often carried by speculative bubbles that make them move too much, to an extent that has little to do with the fundamentals of economics. Currency markets behave like schools of fish: fish go up because other fish go up, and down because other fish go down. As John Williamson, Paul Krugman, and Nobel laureate Maurice Allais have all recently argued, exchange rates are too often "delinked from reality."[33] Allais has coined the expression "global casino" to describe the behavior of currency markets since 1973. We would be wise to return to more stable exchange rates.

In the 1980s, the Canadian dollar went on a roller-coaster ride between a low of 69 cents (US) and a high of 88 cents. The range of fluctuation was thus 24 percent wide around the midpoint (78.5 cents). At first glance, volatility of this order of magnitude seems mild compared with the 50 and 64 percent-wide gyrations which the mark-dollar and yen-dollar exchange rates, respectively, went through in the same period. However, the true economic impact on any country of fluctuations of the domestic currency against the U.S. dollar must be weighted by the importance of its trade with the United States. In the present case, Canada's exports to the United States relative to its GDP are seven times as large as West Germany's and four times as large as Japan's. Thus, the 24 percent fluctuation in the Canadian-U.S. dollar exchange rate matters significantly more for the Canadian economy than the 50 and 64 percent changes of the mark-dollar or the yen-dollar exchange rates for the West German and Japanese economies.[34]

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[32] With international wage and price inflation differentials changing sluggishly over time, it is clearly the nominal exchange rate that drives the real exchange rate over short- to medium-term horizons.

[33] John Williamson, *The Exchange Rate System* (Washington,D.C.: Institute for International Economics, 1983); Maurice Allais, "The Economic Science of Today and Global Disequilibrium" (Paper presented at the International Conference on Global Disequilibrium, McGill University, Montreal, May 1989); and Paul Krugman, *Exchange-Rate Instability* (Cambridge, Mass.: MIT Press, 1989).

Now, the Germans and the Japanese have shown considerable concern over the recent appreciations of their currencies. In West Germany, the strong mark is viewed as one factor that has contributed to its maintaining unemployment at the highest levels of the entire postwar period. In Japan, the strong yen has already induced a massive fiscal strategy to redirect production to the internal market. Canadians should, *a fortiori*, care about their own volatile exchange rate.

I suggest, for a beginning, that Canada declare that the Canadian-U.S. dollar exchange rate will not be allowed to fluctuate more than 5 percent (or perhaps less) on each side of some fixed target parity. This would, in fact, establish a 10 percent-wide target band. The range of allowable movement would therefore not exceed 40 percent of that observed over the last decade. The fixed midpoint of the band would serve to anchor market expectations, and the flexibility around it would help absorb terms-of-trade and other short-run fluctuations. The reduction in nominal exchange-rate uncertainty would also increase real exchange-rate stability. Because real exchange-rate uncertainty no doubt represents a serious barrier to entry in foreign markets,[35] the pace of real economic integration between Canada and the United States would accelerate and the real benefits from the Free Trade Agreement would be more important and more immediate. We would stand a better chance to win the race against our own protectionists.[36]

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[34] By factors of $7 \times \ln(1.24) / \ln(1.50) = 3.7$ and $4 \times \ln(1.24) / \ln(1.64) = 1.7$, respectively.

I do not have a very firm notion of the exact level at which the midpoint of the target band should be fixed. Given our emerging current-account deficit, the midpoint would almost certainly have to be set below 80 cents. One attempt at estimating the "fundamental bilateral equilibrium Canadian-U.S. exchange rate" is a study by John Williamson, which puts the rate at 74 cents.[37] Estimates can be questioned and revised, but for the purpose of this paper I want to stress the principle of the target zone, not to argue about where to place the precise midpoint, or how wide it should be (my suggestion of a 10 percent-wide band is also set as a basis for discussion).

One key implication of stabilizing the Canadian-U.S. exchange rate is that Canada would import the U.S. rate of inflation on average over time, just as it did in the first quarter-century after World War II. As Purvis argues in *Zero*

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[35] This proposition was demonstrated by Avinash K. Dixit, "Entry and Exit Decisions of a Firm under Fluctuating Exchange Rates" (Princeton University, 1987, Mimeographed). It has been vividly illustrated by Krugman, *Exchange-Rate Instability*, chapter 2.

[36] An alternative proposal would define the target band in terms of a weighted average of the currencies of Canada's trading partners, such as the G-10 index published monthly in Table I1 of the *Bank of Canada Review*. It has much analytical and academic merit, but the potential of a purely U.S. benchmark for having a practical influence on the wage and price norms of the majority of Canadian workers and firms is vastly superior to any obscure weighted average of currencies that is applicable as such to no one group in particular. Furthermore, if making a success of the Free Trade Agreement is an overriding objective in the present decade, then the argument for adopting a U.S. dollar anchor is pretty strong.

[37] John Williamson, "A FEER for the Canadian Dollar," Appendix to Paul Wonnacott, *The United States and Canada: The Quest for Free Trade* (Washington, D.C.: Institute for International Economics, 1987).

Inflation, how attractive this would be depends on the degree of confidence we have in the commitment of the United States to the goal of price stability. I do not have an iron-clad answer to Purvis' question, but I certainly have a fair degree of confidence in the long-term personal commitment of Federal Reserve Chairman Alan Greenspan to price stability and in his actual record at the helm of the Fed so far. His successors will also remember how difficult it was for central bankers to eradicate inflation in the early 1980s, and will realize how precious a low rate of inflation is and how important it is to preserve it.

Although this may sound offensive to idealistic central bankers, I submit that "just" doing no worse than our main trading partner would be a pragmatic first step, and a precious improvement over Canada's relative price performance since the end of the Bretton Woods system. Indeed, in the 1973–89 period of exchange-rate flexibility, Canada's annual inflation rate exceeded its U.S. counterpart by about 1 percentage point on average. This is a very significant differential. By comparison, between 1953 and 1973, under a fixed or quasi-fixed exchange-rate regime, the average inflation rates were exactly the same in the two countries. Although there could be many forces at play, the coincidence is striking. It is arguable that, in the shift to the flexible system, Canadian wage and price setters lost their most important benchmark — the rate of U.S. inflation — and that this has been one important factor behind Canada's worse relative price performance since then.

In my view, returning to this benchmark would stand an even better chance of success than in the previous fixed exchange-rate regime, since a greater fraction of the Canadian economy is now exposed to competition with the United States than was the case then. The importance of maintaining or improving Canada's international competitiveness would be the rallying polar star for wage and price setters in this country. The shared knowledge that the entire economy believes in this simple and widely understood principle and then acts on it would introduce the essential element of perceived fairness that seems so crucial to making the general trend of nominal wages and prices more flexible in the downward direction.[38]

The payoff for solving the nominal coordination problem in Canada is so high that the idea would be worth a try even if it stood only a small chance of working. Depending on U.S. price performance, this could mean settling for less-than-complete price stability, but the instance is perhaps one in which the best is the enemy of the good. Could this be the message sent by Governor Rasminsky to Governor Crow?

Summary and Conclusion

My argument can be summarized in the eight following propositions:

1. The marginal cost of further disinflation through monetary restraint alone almost certainly exceeds the marginal benefit when the inflation rate is in the 4–6 percent range. Hysteresis effects, wage-floor effects, impact on future growth, the neglected human costs of unemployment, and the usual current output loss easily swamp the benefits of lower inflation. The pain may even be permanent and the gain, temporary.

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[38] In Austria, the fixed schilling-mark exchange rate has long been a key ingredient in the successful macroeconomic performance of that country. The size of the Austrian economy relative to the West German economy is about the same as that of the Canadian economy relative to the U.S. economy. In Norway and Sweden, the assessment of tolerable economy-wide rates of wage inflation has long been based on what the sectors most open to international competition can afford. See Helmut Frisch, "Macroeconomic Adjustment in Small Open Economies," in *The Political Economy of Austria*, edited by Sven W. Arndt (Washington, D.C.: American Enterprise Institute, 1982), pp. 42–55; and Odd Aukrust, "Inflation in the Open Economy: The Norwegian Model," in *Worldwide Inflation*, edited by Lawrence B. Krause and Walter S. Salant (Washington, D.C.: Brookings Institution, 1977), pp. 107–153.

2. As an approach to disinflation, gradualism has never worked in the past 30 years. All instances of inflation decline except one have followed credit crunches, often accompanied by severe recessions. Actually, confining the discussion to monetary restraint, the "cold-turkey" approach may be less costly than gradualism, because under the latter the costs are built up while the results, in terms of inflation reduction, are trivial — as the experience of the 1987–89 period painfully demonstrates. Soft landing may be a dangerous mirage.

3. In only one case was Canada able to reduce inflation significantly without huge transition costs: under the wage and price controls imposed by the Anti-Inflation Board in 1975–78. Controls *à la canadienne* were enormously successful and cost-effective then, and we should keep them in our toolkit in case inflation rises to high levels again and there is no acceptable alternative. As a way of life, however, controls could become very costly for the economy, and are out of the question in a free society.

4. Greater reliance of anti-inflation policy on fiscal restraint is essential to minimizing the negative impact on investment, net exports, and future income-growth prospects.

5. Greater involvement of the provinces in stabilization policy would clearly help to spread the costs of disinflation more efficiently and more equitably across jurisdictions and regions.

6. In the face of even a very credible commitment on the part of the central bank to the goal of low or zero inflation, private agents are caught in a classic prisoner's dilemma, with no one ready to be first to disinflate and risk being left behind. It is thus very unlikely that "credibility" can reduce the costs of

disinflation. Actually, there is no empirical evidence so far that it has been helpful.

7. In principle, consensus-based institutions could act as a substitute for controls or credibility, but Canada's record in this area has not been good compared with such countries as Austria, Japan, Norway, and Sweden.

8. I favor the return of Canada to a sort of "fat-peg" system with the United States, based on a 10 percent-wide target band (or less) for the Canadian-U.S. dollar exchange rate. The fixed midpoint of the band would almost certainly have to be under 80 cents. This would serve four purposes:

- It would take Canada out of the global casino that world currency markets have become.
- It would provide a much-needed anchor for monetary policy, and it would greatly facilitate private comparisons of international competitiveness, which is particularly desirable in the post-Free Trade Agreement transition.
- It would have U.S. inflation provide a useful benchmark for Canadian nominal wage and price decisions. We would not go for the absolute ideal of price stability, but for the relative, more pragmatic goal of not doing worse than our most important trading partner. This would be a distinct improvement over our relative performance of the past 20 years.
- The allowable movement within the band would leave us with some flexibility in the face of terms-of-trade and other shocks.

What are the short-term options? I would suggest that there are three alternatives.

First, we can pursue the present strategy of monetary restraint, perhaps aided by federal and provincial fiscal policies. We will then continue imposing costs on Canadian society that are likely to exceed the benefits, perhaps by a significant margin. Ironically, these costs will probably be smaller with a hard landing that does land, than with an attempted soft landing that never lands.

Second, we can turn to wage and price controls again. They could be very effective, but would encroach on basic economic freedoms.

Third, we can establish the proposed target band for the Canadian dollar — say, between 74 cents and 82 cents — and maintain the exchange rate somewhat on the high side of the band until the exchange market cools off and labor and product markets adjust their wage and price norms to North American standards. An intervening information and education campaign would do no harm. A combination of the last two alternatives could also be considered.

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Rethinking the Macro Mix: The Case for Provincial Stabilization Policy[*]

Thomas J. Courchene

Introduction

The thrust of this paper is that, over the last half of the 1980s and particularly over the past two years, Canada's macroeconomic policymakers have locked this country into policy paradigms that misread the implications of globalization and integration.

At one level, this may not be a very controversial statement. Most analysts would presumably agree that if the latter half of the 1980s could be replayed with a policy mix that placed more emphasis on fiscal integrity, we would not be embracing the 1990s (and Canada-U.S. free trade) with the current macro constellation — record domestic debt servicing, record current account deficits, a premium over U.S. rates that has been as much as 400 basis points at the short end of the maturity spectrum, a correspondingly overvalued exchange rate, and the threat of a policy-induced recession. But more than this is intended in the statement.

Specifically, whereas the macroeconomic dysfunction of the 1970s was runaway nominal magnitudes and expectations, the dysfunction of the late 1980s and early 1990s is aggregate savings imbalances. Correspondingly, monetary policy was clearly the macro instrument of choice for the 1970s, and as long as inflation remains a threat monetary policy will remain an indispensable instrument. However, the paper will attempt to make a case that, with the imbalances in aggregate savings and the emergence of the twin deficits, concerns relating to fiscal policy must come into the policy limelight. Thus, the appropriate matching of macro instruments with macroeconomic challenges is part of the argument for rethinking the macro policy mix.

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[*] Earlier versions of this paper were prepared for the McGill Economics Centre conference on debts and deficits in November 1989 and for the 1990 Wilfrid Laurier Lecture Series.

As the title indicates, a subtheme of the paper is the potential for provincial fiscal policy. The rationale here derives in large measure from the Canada-U.S. Free Trade Agreement — in particular, from the implications arising from north-south integration for an economy that is so regionally diverse east-west. This aspect of the analysis is at the same time more subjective and controversial. Essentially, it attempts to grapple with the implications that arise from global financial integration on the one hand and real-side (the Free Trade Agreement) integration on the other.

In more detail, the paper proceeds as follows. The next section deals with the increased degree of financial integration and the consequent implications for both monetary and fiscal policy. The section that follows then focuses in more detail on "fiscal" variables by directing attention to aggregate savings imbalances — government deficits, current-account deficits and capital inflows, and private savings balances — with special emphasis on comparative Canadian and U.S. experience. With this as backdrop, the analysis then turns to real-side integration — in particular, to the role of the exchange rate under the Free Trade Agreement. Here I advance the hypothesis that the degree of policy freedom on the stabilization front normally associated with a flexible exchange rate may well be largely circumscribed by the implications that flow from integration resulting from free trade, which, in turn, resurrects the role for provincial stabilization policy.

While the intent of the paper is to lend a new perspective to macroeconomic policy, the analysis inevitably will slip on occasion into aspects of an evaluation of the current macro stance, particularly Bank of Canada policy. Conceptually, however, this is a quite different exercise and would require a correspondingly different approach. Nonetheless, the penultimate section offers some observations relating to the Bank's zero-inflation philosophy, and then presents the outlines of an alternative macro mix. A brief conclusion completes the paper.

Financial Integration and Macro Policy

Toward Perfect Capital Mobility

Several interrelated forces — institutional developments, technological advances, policy initiatives, as well as "exogenous" factors such as energy shocks — have combined to integrate global financial markets and, in the process, to enhance rather dramatically the degree of capital mobility.[1] Underlying all of this was and is the telecomputational revolution and the resulting innovations in financial instrumentation. These innovations can be classified conceptually into three distinct types:

- innovations that embody *transfer of risk* — that is, the "bought deal" transfers price risk from the equity issuer to the intermediary; financial "futures" transfer risk temporally; note-issuance facilities transfer credit risks; and interest-rate and currency swaps transfer interest-rate and currency risks;

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[1] For an elaboration, see Thomas J. Courchene, "Crumbling Pillars: Creative Destruction or Cavalier Demolition?" (Working paper, School of Policy Studies, Queen's University, Kingston, Ont., in a Fraser Institute Conference volume on Deregulation and Regulation, forthcoming).

- innovations that *enhance liquidity* — note-issuance facilities fall into this category, as does securitization; and
- innovations that *enhance access to markets* — interest-rate and currency swaps certainly widen access to markets and the range of innovations referred to above (such as note-issuance facilities) all increase access to capital markets relative to traditional channels such as bank borrowing.[2]

Thus, by facilitating risk transfer, by enhancing liquidity, and by increasing the number of national markets and currencies that comprise the global marketplace, technology-driven instrumentation represents yet another force moving the global financial system toward perfect capital mobility.[3]

Prior to taking leave of these brief notes on financial integration, it is important to devote some attention to the the aggregate-savings and balance-of-payments imbalances of the

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[2] Merrill Stevenson, "Survey on International Banking," *The Economist*, March 21, 1987, p. 39.

[3] The Bank for International Settlements (BIS) summarizes this as follows:

> Capital mobility and financial-market interdependence rose dramatically through the 1970s, spurred on by the progressive removal of capital controls in some large industrial countries. Moreover, it is the Study Group's view that the process of deregulation which began in some large domestic financial markets early in the 1980s has augmented the degree of international capital mobility, as have the processes of international competition and global integration....The progressive securitisation of international credit flows is symptomatic of a high degree of international capital mobility. Some financial innovations, such as the currency interest rate swap and the multiple component note issuance facility, are also contributing to further increases in the degree of international capital mobility....It appears that innovations are occurring in response to opportunities provided by a high level of capital mobility, and in turn are contributing to that mobility.

The BIS notes, however, that "the point has by no means been reached where either nominal or real yields in all domestic financial markets are equalised." See Bank for International Settlements, *Recent Innovations in International Banking* (Basle: BIS, 1986), p. 248.

Group of Seven (G-7) countries. Strictly speaking, these imbalances (including the massive U.S. current-account deficit and the roughly offsetting external surpluses of Japan and West Germany) probably do not increase the degree of financial integration *per se*. But they certainly increase G-7 *interdependence*. Two very important implications flow from this. The first relates to the manner in which the enhanced degree of financial integration can contribute to the emergence of these massive imbalances. As the Bank for International Settlements (BIS) notes:

> Another consequence of a high degree of international capital mobility is that countries appear to experience less difficulty in financing current-account and government fiscal balances for extended periods of time. This means for one thing that governments can choose to delay implementing needed policy adjustments for longer periods than might otherwise be possible.[4]

The second implication flowing from these policy-induced imbalances in aggregate savings is that the G-7 currencies have been driven far off their purchasing power parity values and, more generally, have at least temporarily undermined substantially the paradigm that suggests that exchange-rate movements drive external imbalances. As Richard Lipsey suggests, it is now much easier to sustain the view that the capital accounts are driving exchange rates.[5] In tandem, therefore, flexible exchange rates and heightened capital mobility imply that large, fiscal-induced decreases in domestic savings tend to be offset quickly by capital inflows on the financial side of the balance of payments and by increases in current-account deficits induced by currency appreciation on the real side. While there are obviously some important feedbacks here —

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[4] Ibid., p. 249.

[5] Richard G. Lipsey, "Global Imbalances and American Trade Policy," *Atlantic Economic Journal* 16 (June 1988): 1–11.

such as the impact of currency appreciation on national savings — the point is that this constellation of effects can be a short- and medium-term equilibrium, even to the extent of the resulting fiscal-induced, exchange-rate crowding out leading to an economic restructuring that, in turn, can make the economy become "dependent" on the existing fiscal deficit. More on this vicious-circle aspect of the macro mix below.

Implications for Monetary Policy

As the degree of international capital mobility rises, the channel through which monetary impulses are transmitted to the economy shifts from interest rates to exchange rates.[6] Under the existing environment, any domestic interest-rate hike — relative, say, to the U.S. rate — leads to, or is associated with, a corresponding forward discount on the Canadian dollar, which, assuming the expected future exchange rate is fixed, translates into a corresponding rise in the spot exchange rate. Thus, Canadian short-term interest rates that are 400 basis points above their U.S. counterparts lead to a roughly equivalent currency appreciation.

This implies that, under heightened capital mobility, the incidence of aggressive monetary tightening falls increasingly on the export and import-competing sectors. As an inflation-fighting policy, this makes eminent sense when the inflation pressures are coming from the global economy. However, when the inflation pressure is of domestic origin — for example, wage pressures in the government or nontraded-goods sector or from price pressures emanating from excise tax hikes — it is questionable to attempt to counter this pressure on the backs of exports and import-competing industries.

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[6] In the limit, as capital mobility becomes perfect, monetary policy under flexible exchange rates *is* exchange-rate policy, since any incipient increase in interest rates is converted into a currency appreciation. See Robert Mundell, *International Economics* (New York: Macmillan, 1968), chapter 18.

Beyond these important considerations, financial integration implies that the impact of interest-rate increases will become progressively more *selective* across industries. The BIS suggests that, in general terms, enhanced capital mobility and increasingly sophisticated financial instrumentation can alter the timing and effectiveness of monetary policy in the following ways:

> One broad trend which is likely to have influenced the effectiveness of monetary policy is the increasingly widespread use of variable interest rate instruments and interest rate hedging techniques, particularly in countries which experience high rates of inflation. Variable rate financing differs from fixed rate financing in terms of the effect on the economy in three ways. Firstly, it provides borrowers with a vehicle to avoid being locked permanently into high debt service costs should they undertake new investment projects during periods of high interest rates. Secondly, it ensures that debt servicing costs rise on all outstanding debts when interest rates rise, and it transfers the higher debt service payments to creditors in the form of increased interest income. Thirdly, it creates a solvency risk for any debtors who were approaching the limit of their debt servicing capacity prior to an increase in interest rates.[7]

It is instructive to elaborate somewhat on these points.

In terms of the first of these — namely, the implications of new financial instruments such as variable-rate financing techniques and currency and interest-rate swaps — the implications for present purposes are basically twofold. First, the existence of these sophisticated financial technologies implies that private-sector agents can to an increasing degree "bypass" domestic monetary restraint, either by borrowing offshore and swapping into Canadian dollars or by borrowing domestically but maintaining the flexibility to take advantage of any future easing of domestic rates. Obviously, these techniques will come into play particularly if agents perceive the domestic monetary tightening to be temporary, in which case the effectiveness of tight money is correspondingly reduced. However, instruments also exist for bypassing domestic restraint over the entire length of the investment.

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[7] Bank for International Settlements, *Recent Innovations in International Banking*, p. 252.

The second aspect is related: to the extent that restrictive monetary policy bites, the bite will be much larger on those agents that are not international or not large enough (or not sufficiently aware) to seek refuge *via* sophisticated instrumentation in the international capital markets. This is not quite the same as saying that the incidence of monetary policy is "regressive", but this term will do until a more appropriate one comes along.

Jumping to the third of the BIS's points — namely, the solvency risk for already highly levered agents — brings us directly to the concerns of some of Canada's regions, particularly the Prairies. The issue is straightforward: if one is already highly levered, a rise in interest rates is particularly hard to digest. This places debt-ridden farmers and mortgage holders in the front lines of any inflation fight. To be sure, this is not specific to the current round of tight money. But for the resource-based economies, the current environment represents a triple whammy, as it were:

- resource prices have fallen relative to manufacturing prices in the 1980s;
- the interest-rate-driven, exchange-rate appreciation — roughly 20 percent since 1986 in terms of the U.S. dollar — has sharply exacerbated the impact of resource prices on the economies of Atlantic and Western Canada;[8] and
- the interest-rate rise creates further hardship on farmers and fishermen, among others, since they have fared least

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[8] Since resources are typically priced in U.S. dollars, an appreciation of the Canadian dollar implies, for a given U.S. price of any resource, a corresponding decrease in the price in terms of Canadian dollars.

well in the post-1982 expansion and many are still saddled with debt overhangs.

Small wonder that some, if not all, of the Western premiers are so critical of Bank of Canada policy. The Bank's response is that, while it remains sensitive to regional concerns, there can only be one monetary policy for all of Canada. This is, of course, true. But it begs the question: *which* monetary policy — or at least which monetary/fiscal/exchange-rate mix — is appropriate? Actually, the Bank normally goes further: even higher interest rates than those currently in place are appropriate and would be implemented were it not for the Bank's tempering its policy stance to take account of regional considerations. Some comfort!

The second of the BIS's three monetary policy complications is probably the least understood. The essence of the point is that tight monetary policy in the presence of a substantial domestic debt overhang loses some, perhaps much, of its potential restrictive impact. Consider the following scenario.[9] With roughly $350 billion in government debt outstanding, a rise in interest rates of, say, 4 percentage points will, in steady state, generate an increase in annual interest payments of $14 billion. However, given that over $150 billion of this federal debt is very short term in nature — Canada Savings Bonds, treasury bills, and short-term government debt — roughly one-half of this steady-state impact will occur within one year. If the response on the fiscal side is to allow the deficit to rise by this amount, the result on this count alone is a substantial stimulus to short-term aggregate demand. The *net* impact of the policy will then depend on this stimulus relative to the negative impacts on investment and spending from the higher interest rate. One could, of course, attempt to bring a regional component into this point as well. Although I have not researched this, my guess is that a disproportionate number of bondholders reside in Ontario, which, when combined with the earlier analysis, would exacerbate further the regional impacts of monetary policy.

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[9] Douglas Peters of the Toronto Dominion Bank articulated a version of this point before the Blenkarn Committee. See Douglas D. Peters, "An Alternative Monetary Policy for Canada" (Submission to the Standing Committee on Finance of the House of Commons [Blenkarn Committee], May 15, 1989).

Taken to its limit, this might be construed as an argument that monetary contraction could end up being expansionary — that is, that the contractionary effect of tight money is more than offset by the expansionary impact of the increased government deficit. While one can no doubt construct models that obtain this result, it is unlikely under flexible exchange rates. More to the point, it is not my intention to make such a case; it is, more modestly, to assert that, in order to achieve a given degree of nominal income contraction, the required monetary restraint will have to be greater in the presence of a large government debt.[10]

To recapitulate, in comparison with as recently as a decade ago, the enhanced degree of capital mobility has altered the *channels* through which contractionary monetary policy has its impact on the economy — more through exchange rates and less through interest rates — and the enormous rise in government debt has increased the severity of any monetary contraction required to achieve a given degree of demand restraint. This is part of the backdrop to the ensuing discussion of the appropriate macro policy mix. The other part, detailed later, is that the current challenges on the stabilization front are driven less by concerns relating to runaway nominal magnitudes —

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[10] One can challenge this conclusion or assertion on the following grounds. The way to minimize the complicating impact of the debt overhang on the effectiveness of monetary policy is to get nominal interest rates down. In turn, this requires that inflation be tamed. Thus, while the presence of the debt may make the transition to lower inflation more costly, once lower inflation is achieved debt-servicing implications are lessened. I accept this general point. The real issue is how best to reduce inflation, which is another way of expressing the underlying goal of this paper. More on all of this later.

again in comparison with the mid-1970s — so that, even if monetary policy had retained its effectiveness of the 1970s, there would still be a need to rethink the appropriate macro policy mix.

Implications for Fiscal Policy

As noted in the introduction, one goal of this paper is to present a case for an enhanced role for fiscal concerns as part of the overall macro policy mix. However, the basis for this transcends the traditional Keynesian case for fiscal policy.

Roughly 25 years ago, Robert Mundell developed a perfect-capital-mobility theory of monetary and fiscal policy under fixed and floating exchange rates.[11] The thrust of the Mundell model is that, for a small, open economy under a regime with perfect capital mobility and flexible exchange rates, fiscal policy is essentially impotent in terms of its aggregate demand impact — but not its structural impact, as elaborated below. Specifically, an increase in government expenditure will lead to an incipient rise in interest rates, which, in turn, will trigger capital inflows and an exchange-rate appreciation. The exchange rate will settle at a level where the demand-decreasing impact of the resulting rise in the current-account deficit exactly offsets the demand-stimulating impact of the fiscal expansion, at which point the pressure on interest rates and, hence, on capital inflows is eliminated. Effectively, therefore, the initial increase in the government deficit is fully countered by an increase in the current-account deficit. In other words, this is exchange-rate crowding out.

Readers will note that this "twin-deficit" result has a rather direct application to the post-1982 U.S. macro experience and, more recently, to the Canadian experience. The process works in reverse as well: other things remaining constant, a decrease in government spending will be associated with a currency depreciation and an offsetting increase in the net balance (exports minus imports). Within the Mundell framework, therefore, fiscal policy has no impact on aggregate demand, but it does have an impact on the sectoral composition of this demand. In particular, tight fiscal policy leads, through exchange rates, to private-sector *crowding in*, as it were. But this is getting ahead of the story.

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[11] Robert Mundell, "Capital Mobility and Stabilization Policy Under Fixed and Flexible Exchange Rates," *Canadian Journal of Economics and Political Science* 29 (November 1963): 475–485.

Assar Lindbeck builds on Mundell's framework by arguing that the more "ultra open" is an economy — that is, the more perfect is capital mobility — the more that fiscal policy will have its impact on *relative price changes* rather than on aggregate demand. In the limit, Lindbeck, like Mundell, asserts that pure fiscal aggregate-demand management is "useless," since any potential effects will "spill over" fully to the international economy through exchange-rate changes.[12] However, fiscal policy *will* have an impact to the extent that it alters relative prices, such as real wages and the real return to capital. Since Lindbeck is talking about open economies, these relative price changes are to be viewed primarily as changes relative to prices or returns to capital elsewhere in the world. In effect, Lindbeck argues that the more open is an economy and the more mobile is capital, then the more important are the supply-side effects, relative to the demand-side effects, of fiscal policy.

Examples of these supply-side fiscal measures are not difficult to come by. The U.S. tax cuts of the mid-1980s dramatically enhanced the returns to capital (both physical and human) in that country. Had Canada not followed suit, the result would have been a substantial outflow of financial and human capital. Likewise, the rather spectacular resurgence of Quebec's financial sector reflected the creation of a more open and deregulated financial environment in that province than elsewhere in Canada — again, a supply-side stimulus.

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[12] Assar Lindbeck, "Stabilization Policy in Open Economies with Endogenous Government," *American Economic Review*, Richard T. Ely Lecture (May 1976): 3.

However, by far the largest recent supply-side "fiscal" stimulus affecting Canada is the Free Trade Agreement.[13] When combined with the earlier measures to replicate most aspects of the U.S. tax cuts, the Agreement meant that Canada was positioned for a major infusion of capital, both domestic and foreign, to take advantage of the enhanced returns associated with access to the U.S. market. With the tax increases in the 1989 federal budget and the tax grab associated with the introduction of the goods and services tax (GST), some of the lustre has gone off these initiatives. The implications of this will become more obvious as the analysis develops. Suffice it to say at this juncture that, to the extent that Canada needs access to foreign capital, this capital will now have to be "purchased" at interest rates higher than would have been the case had we not unwound much of income tax reform or, more generally, had we pursued our modest attempts at deficit reduction on the expenditure side of the federal budget.

With these admittedly inadequate snippets of the relationship between "supply-side" fiscal policy and the macro environment, I now turn to the core of the current macroeconomic dysfunction: aggregate savings imbalances.

Fiscal Policy and Aggregate Savings

The Aggregate-Savings Identity

The national-income-accounting identity can be rearranged in the "twin-deficits" form:

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[13] Others may prefer to associate the Agreement with commercial policy rather than fiscal policy. For the purposes of this paper, however, fiscal policy includes all policy initiatives except those arising from the actions of the Bank of Canada.

$$(G - T) \equiv (M - X) + (S - I),$$

where the fiscal deficit ($G - T$) is identically equal to the current account deficit ($M - X$) plus private-sector net savings ($S - I$). This identity can also be expressed as:

$$(M - X) \equiv (G - T) + (I - S) \equiv A - Y,$$

which states that foreign net savings ($M - X$) equals aggregate domestic dissaving (the terms between the identity signs) or, equivalently, the difference between domestic absorption, A, and output, Y.

While exchange-rate changes will affect all components of the identity, it is nonetheless the case that if a country is intent on running absorption, A, above output, Y, it will have a balance-of-payments deficit on current account *irrespective* of the level of the exchange rate. As a final introductory comment, since the working assumption is that the current-account deficit equals the capital-account surplus, these equations state that net capital inflows will be equal to the excess of government deficit over private-sector net savings.

The U.S. Twin Deficits

Focusing for present purposes only on the patterns of national savings in the United States for the 1980s, the U.S. government deficit ($G - T$) as a percentage of gross national product (GNP) remained near its 1982 peak while private net savings ($S - T$) plummeted. The resulting shortfall in aggregate domestic savings [($G - T$) + ($I - S$)] was provided by the foreign sector ($M - X$) through a current-account deficit — or, equivalently, through a capital-account surplus. This observation tells us little or nothing, however, about the underlying causes. Lipsey argues that the "mainstream" approach to all of this is that the triggering factor was the combination of tax cuts and military expenditures that, in turn, unleashed "one of the greatest Keynesian booms of all times."[14]

As the U.S. economy responded to this pump priming, investment expenditures recovered from their 1981–82 recession lows and led to a sharp decline in private-sector net saving ($S - I$), which, in turn, required the United States to resort to foreign savings. U.S. interest rates rose relative to international levels in order to attract the needed capital inflows, which then led, *inter alia*, to an appreciation of the U.S. dollar and to the current-account deficit. This is a variant of the Mundell model, particularly as the economy moved toward full employment: expansionary fiscal policy led to exchange-rate crowding out — that is, the "twin-deficits" phenomenon.

Milton Friedman has taken a quite different view of the underlying analytics. He argues that the U.S. current-account deficit is a reflection of the success, not the failure, of Reaganomics. As a result of the Reagan administration's policies, particularly the tax cuts, prospects on the domestic front "have been sufficiently bright to make investment in the U.S. more attractive to investment elsewhere" and "foreign investors can get dollars only by generating a [U.S.] balance-of-payments deficit on current account."[15] This approach is more in line with Lindbeck's "relative price" emphasis.

Discriminating between these two approaches is very difficult. However, what appears clear from even a casual look at the relevant data is that much more is involved than the Friedman storyline, since there would be no reason for U.S. interest rates to rise relative to international rates if the capital inflows were triggered entirely by enhanced returns on capital. But it is quite another step to argue that Friedman's analysis is wrong in its entirety. This would imply that one could have replaced the U.S. tax cuts with a deficit-neutral hike in expenditures with *no* change in the level of U.S. interest rates required to attract the needed capital inflows. I would find this hard to believe and, I suspect, so would most analysts, which is a roundabout way of saying that both approaches have merit.

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[14] Lipsey, "Global Imbalances and American Trade Policy," p. 2.

[15] Milton Friedman, "Why the Twin Deficits Are a Blessing," *Wall Street Journal*, December 14, 1988, p. A14.

The Emergence of Canada's Twin Deficits

The escalation in the Canadian government deficit over the 1980–82 period was roughly 5 percent of GNP. This was similar to the U.S. spike except that Canada's took place from an existing fiscal deficit of 2 percent, while the United States ran a surplus in 1979. However, the really significant divergence in the years immediately after 1982 relate to the behavior of aggregate private savings $(S - I)$. Canada's 1981–82 stagflation was much more severe than its U.S. counterpart, reflecting, on the financial side, the fact that interest rates in Canada peaked at considerably higher levels than those in the United States and, on the real side, the fact that the collapse in raw materials prices had a greater impact on resource-intensive Canada. The result was that investment suffered much more in Canada than in the United States. Moreover, Canadians were much larger savers than were Americans during this period.

Thus, aggregate private savings was much higher in Canada than in the United States. This accounts for the fact that while the U.S. fiscal deficit was forcing the U.S. economy to draw in foreign capital to finance its overall domestic savings shortfall as early as 1984, the Canadian current-account balance was still in surplus, even though Canada's fiscal deficit was at roughly 7 percent of GNP while the United States' deficit was only 4 percent of that country's GNP.

After 1984, Canada did manage to bring its fiscal deficit (as a percent of GNP) down substantially. However, net private savings fell *even more sharply*, with the result that Canada, too, was forced to rely on foreign savings — that is, to run a balance-of-payments deficit on current account — indeed, increasingly so. It is instructive to point out that this very dramatic fall in $(S - I)$ is only partly due to the recovery of investment from its very low recession values. Canadians are also saving much less now. For example, net household saving in Canada as a percentage of disposable household income peaked at 18.2 percent in 1982. By 1987, it was only one-half this amount (9.4 percent) and still falling.[16]

This brings me to the aggregate-savings data for the second quarter of 1989. The current-account deficit has now mushroomed to nearly $23 billion at annual rates, in contrast to a $3 billion surplus in 1983 (Table 1 presents data for the current account and selected components over the 1980s). This converts to roughly 4 percent of GNP. Government net borrowing has reversed its downward trend — largely thanks to interest-rate-driven debt servicing — and stands at roughly 4 percent of GNP. Together, these twin deficits imply that private-sector net savings is now zero or even negative. While it may be somewhat reckless to extrapolate from the most recent trends, one cannot escape the reality that the twin deficits (expressed as a percentage of GNP) are both currently running at considerably *higher* rates in Canada than in the United States.[17]

Implications for Twin Deficits

Among other interpretations, one can bring both Lipsey's and Friedman's approaches to bear on the observed patterns. My interpretation of Lipsey's variant is that the current macro mix may well be pushing Canada into a substantial and persistent domestic net savings shortfall and, in the process, restructuring the Canadian economy.

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[16] Organisation for Economic Co-operation and Development, *Economic Outlook*, 43 (Paris: OECD, 1988), Table R12.

[17] The data for the third quarter of 1989 reveal a small improvement in the current-account deficit. However, the merchandise trade account registered a deficit in October — the first such monthly deficit in 13 years.

Table 1

Canada's Current-Account Balance, 1980–89
(millions of dollars)

	Merchandise trade	Services	Investment income	Transfers	Current account balance
1980	8,778	–3,131	–7,826	1,048	–1,130
1981	7,292	–3,414	–11,337	1,328	–6,131
1982	17,654	–3,601	–12,670	1,440	2,824
1983	17,457	–3,846	–11,601	1,056	3,066
1984	19,838	–4,434	–13,487	778	2,695
1985	16,392	–4,861	–14,332	810	–1,991
1986	9,786	–5,298	–16,549	1,482	–10,578
1987	11,353	–6,270	–16,520	2,076	–9,360
1988	9,808	–5,983	–18,412	4,270	–10,316
1989 (Q2)	3,472	–7,836	–22,072	3,756	–22,680

Source: *Bank of Canada Review*, September 1989, Table J.1.

In terms of underlying fundamentals, there ought to be no confusion: Canada's fiscal excess is at the heart of the domestic aggregate savings shortfall. A fiscal deficit in the order of $30 billion after seven years of continuous economic expansion is nothing short of incomprehensible. Small wonder, then, that the Bank of Canada is confronted with reining in the resulting aggregate demand pressures. Thus, the 400 or more basis-point premium on short rates draws in the required foreign capital inflows and the consequent appreciation of the exchange rate generates the required current-account deficit. The "restructuring" referred to above occurs because the macro policy mix is decimating aspects of the foreign sector and, in the process, making the Canadian economy more dependent on the inappropriate fiscal deficit.

This is a questionable policy at the best of times: it takes on more dismal overtones in the context of the transition toward the economic integration of Canada and the United

States under the Free Trade Agreement. This approach suggests that the premium on Canadian interest rates may become a permanent feature of Canada's macro policy mix, not to fight inflation but to draw in foreign capital in order that Canadians can continue to maintain inappropriate fiscal deficits and, more generally, absorb more than we produce.

Friedman's interpretation presumably would be that the current-account deficit is emerging because Canada is experiencing an investment boom triggered by the Free Trade Agreement, which, given the domestic savings shortfall, requires drawing on foreign savings. This is obviously a more optimistic scenario — the current-account deficit is financing investment rather than final consumption. There is something to this approach, since Canadian investment has increased considerably over the past two years. Under the Friedman approach, the high interest rates are best interpreted as an offset to this investment boom.

At this juncture, it is convenient to recall the supply-side aspects of fiscal policy. To the extent that the recent tax hikes (rather than expenditure cuts) diminish the attractiveness of the investment climate generated by free trade, the result — under the Lipsey interpretation — will be even higher domestic interest rates to attract the required capital inflows or — under the Friedman approach — an unwinding of the investment boom, neither of which is particularly salutary.

What is intriguing about all of this is that it is Americans, *not Canadians*, who have been engaged in an intense academic and policy debate on the implications of twin deficits. As noted earlier, it may be somewhat reckless on my part to extrapolate on the basis of very recent data. But it would appear to be in the nature of brinkmanship on the part of Canada's macroeconomic policy managers that *nowhere* in any official statements is there any reference to the fact that the existing constellation of policies may be pushing Canada toward increased vulnerability and perhaps unsustainability.

The Sustainability of Canada's Twin Deficits

In terms of the relative vulnerability (or sustainability) of Canada's twin deficits, consider the following observations:

- As a percentage of GNP, the U.S. deficit is not only smaller than Canada's but more tractable as well. Including the social-security account — which will run annual surpluses in the early 1990s in the $100 billion range — a 5 percent broadly based GST or value-added tax would more than cover the U.S. deficit. And this abstracts from major defense cuts, which may be possible as a result of events in Eastern Europe. Canada finds itself in much more dire straits: in addition to the tax hikes in the 1989 federal budget and the proposed GST, it will take a *further* 10 percent GST levy to bring the budget into balance. And these data relate only to national government deficits: the U.S. states run an overall surplus while Canada's provinces run substantial deficits.
- As a percentage of GNP, Canada's net foreign indebtedness — somewhere between $200 and $300 billion — is well above that of the United States. Indeed, in absolute dollars, it is hard to top anywhere in the world.[18]
- Unlike the United States, Canada tends to borrow abroad in foreign, not domestic, currency. Indeed, in terms of the U.S. current-account deficit, one can legitimately ask who's problem this is, because a collapse of the U.S. dollar would impose costs on those who hold the U.S. debt. This would not be the case for a collapse of the Canadian dollar.

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[18] In terms of book value, the U.S. external indebtedness is over a half a trillion dollars. However, there is reason to believe that the market value of U.S. indebtedness is much lower, since many of the United States' external assets were acquired in the 1950s and 1960s. For example, it was only in 1989 that the investment side of the U.S. current account registered a deficit. As Table 1 indicates, the investment-income balance of Canada's current account is about $20 billion in deficit, consistent with the $200-300 billion of reported indebtedness.

In tandem, these considerations suggest that Canada's twin-deficit position may be far more vulnerable than that of the United States. One need not detail the range of problems that would attend a loss of confidence in the Canadian dollar.

Moreover, the longer-term dynamics seem more apparent in the U.S. case. For example, one can envisage a scenario where the debt-servicing component of the U.S. current account eventually satisfies the required shortfall in domestic savings. Further deficits in the investment-income component of the current account then imply that the merchandise component can move into surplus. In other words, under the admittedly rigid assumption that absorption exceeds output in the United States by a constant $100 billion, the longer-term dynamics would be an ever-increasing (foreign) debt-servicing deficit and a falling U.S. exchange rate generating increasing merchandise trade surpluses, leaving an overall current-account deficit of the required $100 billion. As an important aside, this likelihood that the United States will move toward a tradables surplus over the medium term substantially exacerbates the implications of the ongoing Canadian macro policy mix, both in its own right and in terms of its interaction with the Free Trade Agreement. Phrased differently, under the current Canadian macro policy mix, the United States is solving part of its external payments problem at Canada's expense.

The longer-term exchange dynamics for the Canadian dollar are less obvious, largely because of the substantial amount of Canada's indebtedness that is denominated in foreign currency. For example, a depreciation of the Canadian dollar (relative to the U.S. dollar) would, over the short term at least, substantially worsen the overall current-account balance because of debt servicing as well as the slow adjustment of the current account to movements in the exchange rate — the traditional J-curve effect. A depreciating U.S. dollar (relative to the Canadian dollar) would ease the investment-balance component of Canada's current account, but it would also generate problems for the merchandise side.[19]

Fiscal Policy and the Macro Policy Mix

The message I draw from the above analysis is that Canada's macroeconomic policymakers ought to pay far more attention to the potential structural problem on the horizon — namely, the range of concerns that arise from a persistent shortfall in aggregate domestic net savings.

One obvious way to increase national net savings is for governments to pare back their deficits and, in particular, to do so in ways that do not offset the supply-side benefits that accompany the Free Trade Agreement. Moreover, fiscal prudence will also improve the stabilization aspects of the macro policy mix: not only will deficit reduction take some pressure off the Bank of Canada in terms of demand management, but the increased domestic savings should also decrease the need for high interest rates to draw in foreign capital. Thus, the argument for a greater focus on fiscal policy is rooted in both structural (aggregate savings) and stabilization concerns. Note that a substantial shift in the macro policy mix could still generate the same impact on aggregate demand as the current mix, so the issue at hand is not one of combating inflation.

The remainder of the paper is devoted to making the case for an enhanced role for provincial, as well as national, fiscal policy within the overall macro policy mix. Actually, the case can be made in a rather straightforward fashion. In what follows, however, I take a rather roundabout route in order to lend a new (albeit subjective) perspective to the role of the exchange rate.

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[19] I hasten to add that the failure of my intuition to spell out in full detail all of the dynamics does not imply that they are necessarily problematical.

The Exchange Rate and the Free Trade Agreement

Thus far, I have focused on financial integration (capital mobility) and the macro policy mix. I now shift the emphasis to real-side integration — in particular, the Canada-U.S. Free Trade Agreement and its implications for the exchange rate.

An Application of the Concept of an Optimal Currency Area

The exchange rate plays at least two conceptually distinct (although practically related) roles in a highly regionalized economy such as Canada's. First, it is an instrument in the overall macroeconomic arsenal. Second, it is an arbiter of regional fortunes. As North America integrates, the hypothesis advanced here is that these two roles for the exchange rate will come into much greater conflict than is currently the case — and there is ample conflict now!

Underlying this conjecture is Robert Mundell's concept of an "optimal currency area," which he describes as follows:

> Suppose that the world consists of two countries, Canada and the United States, each of which has separate currencies. Also assume that the continent is divided into two regions that do not correspond to national boundaries — the East, which produces goods such as cars, and the West, which produces goods such as lumber products. To test the flexible-exchange-rate argument in this example assume that the U.S. dollar fluctuates relative to the Canadian dollar, and that an increase in productivity (say) in the automobile industry causes an excess demand for lumber products and an excess supply of cars.
>
> The immediate impact of the shift in demand is to cause unemployment in the East and inflationary pressure in the West, and a flow of bank reserves from the East to the West because of the former's regional balance-of-payment deficit. To relieve unemployment in the East, the central banks in both countries would have to expand the national money

> supplies or, to prevent inflation in the West, contract the national money supplies. (Meanwhile the Canada-U.S. exchange rate would move to preserve equilibrium in the national balances.) Thus unemployment can be prevented in both countries, but only at the expense of inflation; or, inflation can be restrained in both countries but at the expense of unemployment; or, finally, the burden of adjustment can be shared between East and West with some unemployment in the East and some inflation in the West. But both unemployment and inflation cannot be escaped. The flexible exchange rate system does not serve to correct the balance-of-payments situation between the two regions (which is the essential problem), although it will do so between the two countries; it is therefore not necessarily preferable to a common currency or national currencies connected by fixed exchange rates.
>
> The preceding example does not destroy the argument for flexible exchange rates, but it might severely impair the relevance of the argument if it is applied to national currencies. The logic of the argument can in fact be rescued if national currencies are abandoned in favor of regional currencies.
>
> To see this suppose that the "world" reorganizes currencies so that Eastern and Western dollars replace Canadian and U.S. dollars. If the exchange rate between the East and the West were pegged, a dilemma would arise similar to that discussed in the first section. But if the East-West exchange rate were flexible, then an excess demand for lumber products need cause neither inflation nor unemployment in either region. The Western dollar appreciates relative to the Eastern dollar, thus assuring balance-of-payments equilibrium, while the Eastern and Western central banks adopt monetary policies to ensure constancy of effective demand in terms of the regional currencies, and therefore stable prices and employment....If the case for flexible exchange rates is a strong one, it is, in logic, a case for flexible exchange rates based on *regional* currencies, not on national currencies. The optimum currency area is the region.[20]

The rationale for this lengthy quotation is *not* to argue for regional currencies. Rather, it is to advance the hypothesis that, as Canada integrates with the United States under the Free Trade Agreement and as the flow of goods "north of 49" shifts from east-west to north-south,[21] the exchange rate will likely become much more difficult to move politically and, I think, economically as well. Wage patterning will come to be rationalized more along north-south, crossborder lines. In anticipation of free trade, the 1988 Quebec budget compared that province's personal and corporate tax rates not only to Ontario but also to Massachusetts, New York, and Michigan. These north-south concerns and comparisons will intensify as Canada-U.S. economic integration intensifies.

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[20] Mundell, *International Economics*, pp. 180–181.

To be sure, when pressures on the exchange rate arise because the United States is inflating (for example), the first-best policy response is to allow the Canadian dollar to appreciate in order to shield us from the U.S. inflation. However, when the origin of the exchange-rate pressure is a relative price shock that impinges differently across regions, it will, in my opinion, become increasingly difficult for the Bank of Canada to take this pressure off through the exchange rate.

To see this, suppose that, from a position of north-south equilibrium for the west of the continent, the prices of raw materials increase. The impact of the terms-of-trade shift will influence the economic prospects of western agents equally on *both* sides of the border. Because raw materials play a much larger role in overall Canadian output and exports than is the case in the United States, the Bank might allow the Canadian dollar to rise relative to the U.S. dollar. Not only would this generate a favorable price wedge for U.S. producers in the west in terms of supplying the Canadian market,[22] but this wedge would occur in the rest of the economy as well — Quebec would now find a price disadvantage *vis-à-vis* the U.S. northeast where *neither* crossborder region would have been directly affected by the terms-of-trade shift. In other words, *all* Canadian regions would be forced to adjust, while their similarly situated crossborder trading partners would be unaffected. Conversely, after adjusting to the U.S. northwest in terms of wages and prices, the Canadian west could be thrown out of north-south equilibrium by an appreciation of the Canadian dollar driven by an overheating of the Ontario market from an automobile boom.

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[21] The parts of Canada south of the 49th parallel are already reasonably well integrated north-south.

[22] Remember that, under north-south integration, everything from guns to butter can, and presumably will, flow in both directions.

The proposition advanced here is that these exchange-rate shifts will become more difficult to implement in an integrated North American economy. Phrased differently, Canada's traditional approach to exchange-rate policy is more easily accommodated when the border is closed and everything flows east-west, basically from Ontario. This will not be the case under real-side integration driven by the Free Trade Agreement.

Should We Fix the Canada-U.S. Exchange Rate?

The thrust of the previous section was that the politics and economics of Canada-U.S. integration may make the exchange rate less flexible, as it were. If this is so, why not go all the way and fix the exchange rate? At first blush, this notion will appear passing strange, since virtually all advocates of free trade argued that a flexible exchange rate was the *sine qua non* of the Agreement. The rationale was straightforward: if, as integration proceeds, Canada's employment level dips, then the exchange rate will swing into action (depreciate) and restore Canadian economic activity.

Underlying this approach is the presumption that employment and economic activity, or real-side factors, will drive exchange rates. However, much of the earlier analysis in the paper is a direct challenge to this paradigm, at least as a short-term proposition. As Peter Drucker has observed, the "symbol economy" — capital movements, exchange rates, and credit flows — is replacing the flow of goods and services as the "flywheel" of the world economy.[23] Moreover, there is ample evidence for Drucker's related proposition that the symbol and real economies are becoming increasingly uncoupled — U.S. exchange-rate movements and, by analogy, those in Canada bear little relationship to the dictates of purchasing power parity (PPP). This does not mean that concerns relating to PPP will not eventually determine exchange rates, only that currencies can be pushed substantially off their PPP values for considerable periods of time. More to the point, the emergence of Canadian twin deficits running well above the percentage levels of their U.S. counterparts suggests that the Canadian dollar might become easy prey for the symbol economy.[24]

More generally, the argument for flexible rates essentially boils down to this: Is a country likely to deliver an independent stabilization/macro policy that is preferable to that emanating from the rest of the world or — in the comparison case of a fixed exchange rate between Canada and the United States — preferable to that in the United States? The answer to this is easy when the United States is veering off in an unacceptable or unstable direction, as it was in the period leading up to the breakup of the Bretton Woods accord in the early 1970s. It is much less clear in the current time frame.

Another way of phrasing the choice is to ask whether the *internal discipline* arising from an independent macro policy mix is, on balance, preferable to — that is, more effective than — the *external discipline* coming from exchange-rate fixity. The answer to this question may well depend on the institutional characteristics of economies. For example, if, because of differing institutional characteristics — public-sector unions, geographic economic diversity, and citizen-state relations as reflected in the array of personal, regional, and intergovernmental transfers — the Canadian economy tends to be more inflation prone, we may find ourselves locked into, first, permanently higher nominal and real interest rates (or at least for a substantial time frame) as we attempt to keep our inflation rates down to those in the United States; and, second, a declining Canadian dollar as we match U.S. interest rates and accept a somewhat higher inflation rate.

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[23] See Peter Drucker, "The Changed World Economy," *Foreign Affairs* 64 (Spring 1986): 3–17.

[24] The exchange-rate fireworks of late January 1990 might be interpreted in this light. Pessimists would presumably add a political factor: the currency implications of the St. Jean Baptiste Day parade the day after the Meech Lake deadline. But, although obviously not irrelevant, this is beyond the purview of the paper.

In part, this is the ongoing policy issue: Why, after a rather prolonged bout of much higher interest rates, is Canadian inflation not more tractable than U.S. inflation? If it turns out that, for whatever reason, Canada is more inflation prone, to continue this policy would be ruinous — we cannot compete in an integrated North America with a permanently higher cost of capital. In such a situation, the extra discipline on domestic activity from a fixed exchange rate may be preferable.

One final point: to the extent that analysis of exchange rates embraces the notion of greater fixity, my impression is that the preference in the literature is to focus not on the U.S. dollar but on a basket of currencies, with weights determined by actual or potential trade flows. If the exercise here is to determine whether the Canadian dollar has appreciated or depreciated over some time frame, reference to a weighted basket of currencies is the appropriate benchmark. However, if the issue is one of macro stabilization within the Free Trade Agreement, the U.S. dollar is the more appropriate frame of reference.

While a fixed exchange rate in the context of the Free Trade Agreement is a viable alternative approach to macroeconomic management, my purpose in this paper is not to opt for the abandonment of flexible rates.[25] Rather, it is the somewhat more modest goal of arguing that both real-side integration under the Agreement and financial integration — in the presence of Canada's aggregate savings imbalances — point in the direction of conferring some advantage to greater exchange-rate fixity. If this is correct, it immediately begs another question: How will Canada then handle external shocks that have different effects across its regions? One answer is subnational or provincial stabilization policy, to which I now turn.

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[25] In a more recent paper, I do argue for fixed rates. See Thomas J. Courchene, "Zero Means Almost Nothing: Toward a Preferable Inflation and Macro Stance" (Paper prepared for the House of Commons Standing Committee on Finance, Ottawa, June 7, 1990).

Provincial Stabilization Policy

In the forthcoming proceedings of a conference on provincial finances, Edward Gramlich writes:

> One of the least controversial propositions in both public finance and macroeconomics is that only the national government should attempt to conduct stabilization policy. The conventional view, exposited by [Wallace] Oates fifteen years ago and never seriously challenged since that time, supposes that demand conditions in a province mirror those in the national economy, that fiscal multipliers for national budget changes are higher than those for provincial budget changes, and that provincial debt is external and national debt internal. The inference based on these premises is that it is unwise for a provincial or subnational government to run its own fiscal stabilization policy.[26]

Gramlich then adds:

> While these premises may have been accurate fifteen years ago, by now each can be seriously questioned:
>
> *Relative price shocks.* The new importance of relative price shocks, whether from the energy sector or exchange rates,

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[26] Unlike in the U.S. literature, the case for subnational stabilization policy has had a more sympathetic hearing in Canada. See, for example, Clarence L. Barber, *Theory of Fiscal Policy as Applied to a Province*, The Ontario Committee on Taxation (Toronto: Queen's Park, 1966); and Thomas A. Wilson, "Stabilization Policy Issues: An Appraisal of Possible Roles of Flexible Fiscal Policies in Ontario," in *A Separate Personal Income Tax For Ontario: Background Studies*, edited by David W. Conklin (Toronto: Ontario Economic Council, 1984), pp. 139–161.

> implies that demand conditions may not be highly correlated across provinces. They may not even be positively correlated, meaning that expansionary and contractionary policies may be simultaneously called for in different parts of the country.
>
> *Fiscal multipliers.* Now that the world is on floating exchange rates, or at least dirty floating exchange rates, national fiscal changes are largely offset through trade balance crowding out. Subnational fiscal changes, on the other hand, are likely to be too small and too uncoordinated to cause such crowding out. In effect, subnational economies are still on fixed exchange rates.
>
> *Nontradeable goods and services.* The rapid growth of the nontradeable sector, especially services, implies that a large share of value added is now produced and consumed inside a province.
>
> *Open capital markets.* The opening of international capital markets, and consequent highly elastic supply of capital, implies that all debt, whether provincial or national, is external and imposes costs on the jurisdiction.
>
> The first and second of these points constitute arguments for conducting fiscal stabilization policy at a subnational and not a national level. The third and fourth neutralize what had previously been felt to be advantages for stabilizing with national, as opposed to subnational, budgets.[27]

Prior to proceeding further with the practical case for subnational stabilization in the Canadian context, it is instructive to elaborate analytically on Gramlich's second point — namely, the fact that provinces are on fixed exchange rates. From the vantage point of the Mundell model with perfect capital mobility and *fixed* exchange rates, fiscal policy emerges as a very powerful instrument. For example, fiscal contraction leads to an outflow of money consistent with maintaining the world (national) interest rate.[28] As Gramlich notes, this suggests that, under high capital mobility, fiscal policy is more powerful at the provincial level when exchange rates are fixed than at the federal level where the exchange rate is flexible.

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[27] Edward Gramlich, "A View from the Outside: The Relevance of Foreign Experience" (Paper presented to the Canadian Tax Foundation Conference on Provincial Finances, Toronto, 1989; forthcoming in proceedings volume).

[28] In technical terms, both the IS and LM curve shift to the left and intersect at the original interest rate but a lower level of aggregate demand.

Analytically, this seems unassailable. Whether or not it holds at the practical level is less obvious, since the more that economic activity flows north-south, the more that the relevant exchange rate is the Canada-U.S. rate and not the imposed fixity of rates between the provinces. I leave it to others to work out the detailed analytics and empirics here.

In terms of the practice of provincial stabilization policy, I want to focus on the two major demand shifts over the recent past. The first of these is the series of energy price shocks. By dramatically increasing energy royalties and depositing a substantial portion in its Heritage Fund, Alberta was in fact conducting appropriate stabilization policy — namely, taking some of the heat off the relative price increase. To be sure, the boom still got out of hand, in part because of the sheer magnitude of the price shock — nearly tenfold, measuring from trough to peak of the world price. Moreover, the National Energy Program (NEP), whatever its other pros and cons, effectively transferred energy rents, through subsidized pricing, to all Canadians and undermined much of the impact of Alberta's attempt at stabilization. And later, when energy prices collapsed, the fiscal parameters shifted in a manner that partially cushioned the industry.

The second demand shock is Ontario's post-1982 economic boom. As the boom gathered momentum, Ontario had several good budget opportunities to relieve some of the demand pressure. This was particularly true for its 1988 budget. At this time, concern with a resurgence of inflation was already being reflected in Bank of Canada policy. However, rather than taking the steam out of the economy, the Ontario budget served to increase spending. The end result was that the Bank was forced to tighten the monetary screws a few further notches, the impacts of which are still with us. Thus, rather than using an instrument (provincial fiscal policy) that is ideally suited to releasing demand pressure where it is occurring, the fallback solution — or perhaps more appropriately the "default option" — applied by the Bank was to raise interest and exchange rates, thereby spreading the inflation fighting to those parts of the country that could hardly be said to be part of any inflation problem. The point is not to point the finger at Ontario.[29] Rather, the general issue — indeed, concern — is that the overall macro policy framework was not, and still is not, conceived in a manner consistent with the full implications of global integration of both the real and financial economies.

It might be useful to look at this general issue from the quite different vantage point of the European Community (EC). The driving force behind the European Monetary System — the currency "snake" — is the desire eventually to move to a unified currency. Because the snake substantially reduces the flexibility of individual EC currencies, it embodies the same sort of free-rider issues alluded to above in the Canadian context.

Consider, for example, the impact of yet a further increase in the West German current-account surplus triggered by, say, an export boom. The mark will rise to the top of the "snake" and then any further appreciation of it will also imply an appreciation of the franc, the lira, and other EC currencies. In other words, the mark's appreciation will fall short of a "market-clearing" rate, which implies that the French, Italians, and so on will end up with overvalued currencies. Thus, as a result of the operations of the snake, the West German export boom creates unemployment in France and Italy. In balance-of-payments terms, the West German export surplus remains higher than would be the case if the mark was not part of the snake, and this is offset by the fact that the French and Italians find their current-account balances eroding. Needless to say, this is generating substantial concern in the EC.

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[29] Although I have done so elsewhere. See Thomas J. Courchene, *What Does Ontario Want?* (North York, Ont.: York University, Robarts Centre for Canadian Studies, 1989).

One solution is to develop codes of conduct relating to national fiscal policy, particularly for regions with surpluses. Thus, if West Germany is experiencing increasing surpluses, that country's fiscal authorities would be expected to take some of the pressure off its economy. This is the direction in which the EC is now heading in terms of handling the move toward relative exchange-rate fixity.

This is not quite the case for provincial fiscal policy, but it is close. The Europeans are committed to relative fixity of exchange rates, and the fiscal rules mitigate the potential fallout from such a commitment. Any Canadian interest in more fixity of exchange rates within the Free Trade Agreement arises not from any such commitment, but because the natural economic and trade relationships are both regional and cross-border — that is, unlike in the EC, the driving force in North America is economic, not political or monetary, integration. In both cases, however, there are implications for the conduct of fiscal stabilization — particularly when certain provinces and countries are booming — within the free trade area.

Two other possibilities arise. One is for the federal government to embark on a regionally differentiated fiscal policy — for example, the imposition of income tax surtaxes in booming regions. While Canada has some experience with such measures (R & D tax credits vary across provinces), I assume that this general approach is a nonstarter.[30] The second is for the Bank of Canada (or the federal government) to move somewhat more formally to embracing fixed exchange rates. This, too, is unlikely in the immediate future, although the message emanating from the above analysis is that the exchange-rate regime is likely to evolve in this direction.

The question that always seems to arise in this context is: What's in it for Ontario — or, more generally, for the booming provinces? Why would Ontario want to engage in countercyclical fiscal policy? The quick answer is that it is not only in the national interest, but in Ontario's interest as well. Tempering the boom by siphoning off some of the excess aggregate demand in terms of an increased budget surplus (or decreased deficit) allows the province to infuse these monies later, if and when the economic activity declines. More to the point, however, Ontario has probably paid quite dearly for not engaging in active countercyclical policy. Some part of the many plant closures and tens of thousands of projected and actual layoffs can be attributed to the high-interest-rate and exchange-rate policy, and some part of this, in turn, can be attributed to Ontario's earlier fiscal policy stance. Thus, while provincial recalcitrance cannot be assumed away, the underlying issue is that the ongoing conception of, and public debate on, macroeconomic stabilization tends to ignore the potential for meaningful provincial stabilization.

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[30] It is important to note, however, that the NEP was, in effect, a regional stabilization policy — albeit largely inappropriately conceived — conducted at the federal level. Recall that the NEP was a *budget!*

Finally, while the rationale for provincial stabilization policy was couched in terms of accommodating greater exchange-rate fixity, provincial stabilization is a valuable instrument in its own right, quite independent of any linkage to exchange-rate issues.

The Current Macro Policy Mix

The Bank of Canada's Philosophy

As Canada's economy edges toward recession, it is becoming progressively easier to pin the blame on high interest rates and, indeed, on Bank of Canada Governor John Crow. In the Governor's defense, and as elaborated earlier, he certainly has not had his share of fiscal breaks. In this connection, it is instructive to focus on events surrounding the 1988 "free trade" election.

The Progressive Conservatives were right: free trade was a boost to the economy. Had the federal government accordingly brought down a tough budget in recognition of this in 1988, 1989 may well have played out quite differently. But it did not, which left the Bank responsible for dealing with the excess demand. By raising interest rates in both the pre- and post-election periods, the Bank then handed the government a real problem on the fiscal front in terms of the buildup of debt servicing. For example, the runoff of Canada Savings Bonds in the first quarter of 1989 was $6.3 billion — compared with total net sales for the 1988 campaign of only $3.6 billion — and these had to be refinanced at higher rates. In any event, had the fiscal authorities acted first, the macro policy mix would have shifted toward tighter fiscal policy and a more moderate monetary restraint.

As events unfolded, monetary policy became very tight, as reflected in the divergence between Canadian and U.S. interest rates, and Ottawa could then not even hold the line on the deficit. Combined with Ontario's earlier failure to engage in restraint, one can make a strong case that the Bank was, in effect, cornered by fiscal initiatives or, rather, the lack thereof.

And now it is Finance Minister Michael Wilson's turn to be cornered. Because aggressive monetary policy has positioned us so far out on a limb in terms of interest-rate and exchange-rate overshooting, the required fiscal policy also has to be far more aggressive than would have been the case had the macro policy mix been more balanced in the first place.

Despite these sympathetic comments, all is not well with the Bank's underlying philosophy, the initial and still the most comprehensive statement of which was laid out by Governor Crow in his Hanson Memorial Lecture in 1988:

> Theory and experience — much of this experience not overly cheerful but certainly instructive — both point to a very clear answer. Monetary policy should be conducted so as to achieve a pace of monetary expansion that promotes stability in the

> value of money. This means pursuing a policy aimed at achieving and maintaining stable prices.[31]

In the same lecture, the Governor goes on to argue that the notion of pursuing a policy designed to hold the rate of inflation stable at, say, 4 percent is "simply unrealistic":

> [I]f the authorities were unwilling to act to get the rate of inflation down from, for example, 4 per cent, why should anyone believe that they would be any more willing to get it back to 4 per cent if for one reason or another upward pressures on prices led the inflation rate to rise to 5 per cent? And so on. This is why a commitment to a steady inflation rate is ultimately not credible. To my mind, the only realistic policy we can pursue that will generate and warrant confidence in the future value of money is to work towards price stability.[32]

This, then, is the essence of the Bank's commitment to price stability, or zero inflation — zero is not only the preferable inflation target, it is also the only credible one.

The *benefits* — that is, abstracting from the *costs*, which will be dealt with later — of wrestling inflation to the ground are substantial. Apart from the obvious efficiency or microeconomic gains — elaborated in detail in the C.D. Howe Institute's book, *Zero Inflation: The Goal of Price Stability* — that come from lower inflation, there are also some very important, even critical, gains on the macroeconomic front. In terms of the thrust of the earlier analysis, the most apparent of these is that interest rates would fall, and so would debt-service charges. Not so evident, but nonetheless important, is that private savings rates would rise. This will occur because nominal (including inflation) earnings on savings instruments are subject to income taxation, so that, as inflation falls, the *real* return on savings will rise.[33] Thus, aggregate domestic net savings will rise on two counts: the fiscal deficit is less, and ($S - I$) increases because S rises. In turn, this will decrease the need to resort to foreign savings and, hence, the need to have high interest rates to attract these foreign capital inflows. Related to this easing up of interest rates and foreign savings is that the exchange-rate overvaluation will correspondingly decrease.

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[31] John W. Crow, "The Work of Canadian Monetary Policy" (Eric J. Hanson Memorial Lecture delivered at the University of Alberta, Edmonton, January 18, 1988); reprinted in *Bank of Canada Review*, February 1988), p. 4.

[32] Ibid., p. 5.

While this paints a very rosy macro picture in terms of the implications arising from reducing inflation, it has nothing in particular to do with the optimality of *zero* inflation. Rather, it suggests that there are substantial benefits from getting inflation down from 6 percent to 3 percent, further benefits if inflation then falls to zero, and, indeed, further benefits still if inflation fell to, say, – 2 percent. The question thus becomes: What are the *costs* of getting inflation down and, in terms of the underlying thrust of this paper, what role does the macro policy mix play in facilitating the transition to lower inflation?

This issue is now being joined. Robert Lucas has provided one of the first critiques.[34] His analysis is spelled out in an earlier paper in this volume. Pierre Fortin argues in a recent paper that, given the existing institutional arrangements for wage setting, zero inflation is probably not in the attainable set — that is, that the transition costs are prohibitive:

> I also think that the Bank's German-like strategy of announcing a zero-inflation target is inappropriate. My reasons are not theoretical, but practical. First, that strategy will fail and...it would serve no purpose having our central bank losing its credibility like this. Second, wage resistance to

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[33] Consider the following two cases. In the first, inflation is 4 percent and market interest rates are 8 percent (with a real rate of 4 percent). With a marginal tax rate of 50 percent, the after-tax nominal return is 4 percent — exactly the same as the rate of inflation — so that the after-tax real return is zero. In the second case, inflation is zero and the market (and real) rate is 4 percent. The after-tax nominal and real return is thus 2 percent.

[34] See Robert F. Lucas, "The Bank of Canada and Zero Inflation: A New Cross of Gold?" *Canadian Public Policy* 15 (March 1989): 84–93.

> deceleration is the reason why it will fail. In our system of decentralized and overlapping long-term wage settlements, resistance to wage deceleration is highly non-linear, which means that it takes a lot more slack to reduce average wage growth from 4 to 1 per cent than from 10 to 5 per cent. However, given the need for relative wage flexibility, to get average wage growth down to 1 per cent will require many settlements to provide for absolute nominal wage decreases. To reduce and to maintain wage growth at the small positive level consistent with price stability on average would therefore require an amount of excess unemployment that our modern democratic society cannot tolerate.[35]

In an even more recent paper, Fortin focuses on the implications of zero inflation in the context of some new empirical evidence on wage determination.[36] Essentially, Fortin introduces a "credit crunch" variable to the specification of wage equations and then reworks and reviews the empirical work on the Canadian Phillips curve.

Two conclusions are of particular relevance to the zero-inflation debate. The first is that Fortin's new evidence suggests that, for low inflation rates — for example, below 4 percent — the long-term Phillips curve is no longer vertical. What this implies is that while the long-run costs of going from 10 to 5 percent inflation may be zero — that is, the Phillips curve is vertical — the process of moving from 4 percent to zero will generate some permanent unemployment — the Phillips curve is negatively sloped in this range.

The second conclusion is related, but it is cast in terms of the growing literature on hysteresis — namely, the notion that the steady state is not independent of the path toward the steady state. In particular, Fortin finds that only increases in the rate of unemployment, not high unemployment rates themselves, are important for wage adjustment. In Fortin's words,

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[35] Pierre Fortin, "Improving Canadian Macropolicy: The Lessons from Thatcher, Greenspan, and McDougall" (Paper presented to the Moneco-Econtro Conference, Kingston, Ont., August 30, 1989).

[36] Pierre Fortin, "Credit Crunches and Wage Dynamics: A Revision of the Canadian Phillips Curve, 1957–1987" (Paper presented at the Third Annual Conference of the Canadian Macro Study Group, Queen's University, Kingston, Ont., November 1989).

> the bad news is that a permanent reduction in inflation calls for a permanent increase in unemployment and, possibly, if inflation is already low enough, a permanently rising rate of unemployment.[37]

To these arguments, one can add the Lucas variant of the concern over credibility and feasibility: "Since the Bank has not achieved zero inflation in the post world war II era for any significant duration, why should individuals believe in this policy now?"[38] Moreover, as the earlier analysis emphasized, an increasing degree of north-south integration in the wake of the Free Trade Agreement will likely increase both credibility and feasibility concerns if Canada is pursuing a quite different inflation target than is the United States. However, if recent pronouncements by officials of the U.S. Federal Reserve — to the effect that zero inflation by 1994 is a policy goal — actually find their way into policy formulation, then this particular concern would presumably diminish somewhat.

Therefore, the first overall point to make regarding the Bank of Canada's anti-inflation philosophy is that even in the best of times (and with the best of macro mixes) a zero-inflation target may not be appropriate. The second general point is that Governor Crow, in his Hanson Lecture, placed precious little emphasis on the potential, even critical, supporting role of the remainder of the macro policy instruments. His vision was a 1970s' one in which the only macro challenge is inflation and controlling inflation is basically the responsibility of the Bank of Canada. The Governor noted, correctly, that the country has made important, albeit costly, strides in reducing inflation to more acceptable levels. Now the Bank's role is to go the next step and strive for price stability. In the remainder of the

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[37] Ibid., pp. 10–11.

[38] Lucas, "The Bank of Canada and Zero Inflation," p. 90.

Hanson Lecture, the Governor focused on a variety of issues such as the transmission mechanism for monetary policy, the role of expectations in the inflationary process, and the reliability of monetary aggregates as policy indicators. Indeed, I do not think that it is an ungenerous interpretation to read into the philosophy that the Bank has disregarded any use of intermediate targets. What matters is results — that is, the inflation rate. Canada needs price stability, and policy will be geared in this direction regardless of what is happening in the United States or elsewhere, let alone on the fiscal front.

This leads to a related point. Traditionally, a policy strategy, monetary or otherwise, embodies targets, indicators, and instruments. One of the problems with the Bank's philosophy is that there are no policy indicators — that is, there are no measures that would indicate whether the policy setting at a given point in time is appropriate in terms of achieving the ultimate goal or target. This was the role played by the rate of money growth in the Bank's policy strategy of the 1970s. Money growth targets were enunciated and interest rates were calibrated to keep actual money growth rates in the target range. In the current context, the lack of indicators, as well as the absence of a time frame over which price stability is to be achieved, means that agents have no way of knowing whether the appropriate Canada-U.S. short-term interest-rate differential is 300 or 400 or 500 basis points. This inherent uncertainty, while costly in its own right, also contributes to volatility in the capital markets.

In any event, I believe that the Bank's single-minded pursuit of price stability is outmoded as a philosophy applicable to Canada in the 1990s, where aggregate savings imbalances are driving the global economy, where global financial integration has altered the channels and impact of monetary policy — in comparison with the 1970s — and where integration under the Free Trade Agreement has altered the role of the Canada-U.S. exchange rate. Why did the Governor make no reference in the Hanson Lecture to the mid-1980s U.S. experience, when high fiscal deficits in the face of low savings fed through, *via* high interest rates and currency appreciation, to record persistent current-account deficits and, more recently, to an exchange rate that — despite the size of the U.S. economy — is increasingly at the whim of the symbol economy? Given the large fiscal deficits in Canada and the fact that net household savings as a percent of disposable income had fallen by 1988 to one-half their 1982 rate, it was obvious that aggressive monetary tightening would draw in substantial foreign capital — why not get 3 or 4 percent more interest on short-term funds than is available in the United States? — drive up the exchange rate, and clobber aspects of the export sector. Moreover, in January 1988 it was obvious that Ontario was experiencing substantial overheating. There is no mention in the Hanson Lecture that provincial stabilization policies can and should play a role in any overall stabilization plan.

One counter to all of this has been provided recently by Peter Cook — namely, that the Governor does *not* have sufficient freedom to spell out the implications of alternative fiscal scenarios:

> In the United States, Federal Reserve Board chairman Alan Greenspan does not mind treading on politicians' tootsies. He can go before Congress and tell them, straight out, that deficits produce high interest rates and that, to get lower rates, they must steel themselves to make real, not phoney, cuts in the federal budget.
>
> Contrast that with...John Crow who, when testifying before the airheads on the Hill, must acknowledge that in them he is addressing his political masters.
>
> Mr. Crow cannot tell the truth about the malodorous effect of deficits on monetary policy because his central bank does not have the independence of Mr. Greenspan's.[39]

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[39] Peter Cook, "Why the Best (Maybe Only) Hope for Lower Rates Is Budget Cuts," *The Globe and Mail* (Toronto), February 1, 1990, p. B2.

There is, of course, something to this constraint imposed by the parliamentary relationship. However, I would have thought that the Governor had sufficient latitude to sketch out the implications of his policy for alternative fiscal (federal and provincial) scenarios. After all, the philosophy embodied in the Hanson Lecture effectively amounted to a regime shift in terms of monetary policy. Can a Bank of Canada governor be held subject to censure or dismissal for suggesting that, in this new regime, provincial fiscal policy may have a role to play in the overall macro policy mix? Hardly, since Governor Crow's current line is that any regional fallout from the monetary stance is best handled through the fiscal side. By analogy, presumably he could have outlined alternative approaches on the fiscal front that would have mitigated the implications of the fight against inflation. Alan Greenspan could never get away with not spelling out these implications, in part because the United States has a much more open system when it comes to the design and implementation of macro policy generally, and in part because *within* the U.S. Federal Reserve System, the 12 Federal Reserve Banks each have monthly or quarterly policy journals where any regime shift would merit substantial attention and evaluation.

However, I realize that in some ultimate sense I have to lose the above argument, since, in the final analysis, the Governor is responsible to the federal government in terms of the overall monetary thrust. And I find it difficult to argue that the Minister of Finance and the Department of Finance were not aware of the implications of the new monetary thrust. What is, I think, much easier to argue is that the provincial treasurers and average Canadians were kept in the dark, one consequence of which was that public opinion was woefully ill-informed in terms of the interest-rate and exchange-rate implications of not reducing fiscal deficits.

A Preferred Macro Policy Mix

I begin by once again quoting Peter Cook:

> The reality is that only through the unmentionable — a unified monetary and fiscal policy designed to stabilize the deficit, albeit at a certain inflationary cost — can Ottawa dig itself out of a hole. The key to doing it is a tough budget that will so impress financial markets that the Bank of Canada will have the scope to bring down interest rates.[40]

Elaborating, for now, only on the first sentence in the quote, the essence of a "unified" or coordinated macro policy mix is to recognize the emergence of the twin deficits as a macro challenge and to assign this rough priority with the inflation challenge. This is not to downplay inflation control. On the contrary, if we want progress on both these fronts to be sustainable, they have to be addressed in a coordinated way.

Toward this end, a preferred policy framework would be the following. The role of monetary policy is to create an environment in which individuals and firms can make decisions about the future without having to worry about an escalation in inflation.[41] The substantive issue then becomes one of whether this "prevention of escalation" is defined from the perspective of, say, 4 percent or 2 percent or zero inflation.

Immediately, one is thrust not only into a cost-benefit framework, but also into a framework that necessarily focuses on the potential fiscal contribution. The costs of achieving and maintaining a given level of inflation can then be assessed under different fiscal and monetary mixes. So can the implications of alternative mixes for the twin-deficit challenge. What will (or should) become obvious is that an increased role for fiscal restraint will allow greater progress in terms of *both* macro challenges. An important and essential by-product is that the issue of the appropriate macro policy mix would be front and center in terms of the policy debate. For example, fiscal managers at both levels of government would have to justify their budgetary positions not only in terms of political reference points but also with reference to the overall macro stance. Within this framework, the Bank may still want to push for zero inflation. However, the Bank would not be able to avoid, as it can now, addressing the likely implications for variables such as interest rates and exchange rates under alternative fiscal scenarios. Neither could the fiscal authorities.

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[40] Ibid. The "inflationary cost" refers to the impact of having the exchange rate fall back to the range of purchasing power parity.

[41] This is a variant of the definition of zero inflation provided by W. Lee Hoskins, President of the Federal Reserve Bank of Cleveland — namely, "an economic environment in which people make the decisions about the future without having to worry about long-run inflation" (cited in Terence Corcoran, "Despite Bank Bashers, Zero Inflation Is the Right Monetary Policy," *The Globe and Mail* [Toronto], November 10, 1989, p. B2).

This brings me to the second sentence of the Cook quote. The chickens have finally come home to roost with a vengeance for the Minister of Finance. Through his fiscal deeds, or lack thereof, on the one hand, and his buying into (implicitly or explicitly) the Bank's philosophy on the other, he has backed himself into a corner from which he has to deliver a "procyclical" budget — a restrictive budget as the economy appears headed into recession — if he wants interest rates and exchange rates to return to more normal levels. This is the inevitable legacy of stalking two macro targets with a highly unbalanced mix of monetary and fiscal policy.

There is a glimmer of a silver lining, however. The trick, flowing from the earlier Lindbeck analysis, is to increase domestic aggregate savings while at the same time restoring the "relative price" benefits that derive from investing in Canada in the context of the Free Trade Agreement. In crass political terms, this means expenditure cuts rather than tax increases. And there is the added benefit that if the budget is sufficiently tough, the Bank can then relax its policy stance and the Department of Finance can reap the gains of a reduced debt-servicing burden.

In order to assess the impact of this alternative mix in terms of some basic analytics, it is useful to view it from the perspective of the equation given earlier in this paper — namely, the relationship that equates foreign net savings with the difference between absorption, A, and output, Y. Within this framework, the aggregate demand (or inflation) concern is that actual output is running too high relative to potential output. The twin-deficit concern is that G exceeds T and that A is running well above Y. Excessive reliance on aggressive monetary policy essentially targets policy at controlling output, Y. Other things being equal, absorption will fall along with decreases in Y. Other things are not equal, however, and to the extent that aggressive monetary policy increases debt servicing and clobbers investment, this fall in Y may well be accompanied by an even greater divergence between A and Y. This relates to my earlier comment that high interest rates are restructuring the economy away from the tradables (export) sector and entrenching the existing reliance on the fiscal deficit.

Under the alternative monetary mix where fiscal (federal and provincial) policy plays a more constructive role, the decrease in aggregate demand can be made equal to that under the existing mix. As noted, this would require more aggressive fiscal tightening, offset by a less aggressive monetary stance. However, the composition of this identical degree of aggregate demand contraction would be much different. Specifically, fiscal policy works much more directly on decreasing absorption, A, than does monetary policy. Thus, the demand restraint would be accompanied by a decrease in government deficits or, equivalently, by an increase in aggregate domestic net savings — that is, a fall in $(A - Y)$ — and, therefore, less reliance on foreign savings. Relative to the existing mix, this would encourage the tradables sector $(X - M)$ at the expense of government deficits — that is, it would "crowd in" the tradables sector, as it were. Moreover, the longer-term effects would be far more favorable since the deleterious impact of the current stance (interest rate policy) on investment would be mitigated.

If the macro issue was solely one of controlling aggregate demand, then one could argue that, under the current stance, "good" monetary policy is needed to substitute for "bad" fiscal policy. More than this is involved, however, since "good" monetary policy is substantially exacerbating the other macro challenge — namely, the imbalance in aggregate savings. Peter Cook may well refer to a unified or coordinated macro thrust as "unmentionable," but we both agree that it is inevitable. More to the point, the critical next move is Mr. Wilson's.

In a sense, the above analysis has been easy. The really difficult questions will arise *after* the next federal budget. If the Finance Minister delivers a budget that is not tough, but that is nonetheless in the direction of restraint, then the Bank will likely be reticent to ease up much. Given that the Minister has supported the Bank's underlying philosophy for all this time, such lacklustre support on the fiscal front would presumably not play well in already jittery world capital markets. In the face of the resulting exchange-rate volatility, the tendency will likely be some sort of heavily managed exchange-rate floating or even fixity. However, if the budget is appropriately tough, then the game alters substantially. Interest rates can come down, aggregate domestic savings will rise, and the overall macro policy mix will become more balanced.

As noted earlier, an inevitable cost of running a highly unbalanced macro policy mix is that domestic policy is progressively driven by the symbol economy. And in the current context, the symbol economy leaves no doubt: it demands a substantial, procyclical macroeconomic policy, especially on the fiscal front.

Conclusion

Recent Canadian macroeconomic policy has been a disaster. Because the fiscal authorities did not move in a timely and appropriate fashion, aggressive monetary policy that was designed to combat inflation has saddled Canada with staggering real interest rates and an overvalued exchange rate precisely when the Canadian and U.S. economies are integrating under free trade. If this policy stance persists, the damage to the export sector will be substantial and long lasting, and, ironically, it will place pressures on the fiscal authorities to provide stimulus to offset the decline from the tradables sector. And because the impact of monetary policy has been to cause Canadian interest rates and exchange rates to overshoot their equilibrium values, the appropriate stance of the federal budget — to restore some semblance of sanity to macro policy — calls for far larger budget cuts than the state of the economy might otherwise suggest.

Canada is in this bind because the fiscal and monetary authorities have misread the implications of integration — both financial and real — for the conceptualization and conduct of macro policy. For better or worse, Canada has emerged from the 1980s with three macroeconomic challenges:

- the enduring chestnut of inflation control;
- the evolution of a problem of twin deficits, each of which is currently running at 1½ times the U.S. rate; and
- the likelihood that the appropriate Canadian exchange-rate policy in the light of the Free Trade Agreement may be one of much greater fixity than is generally anticipated.

It is not merely the case that aggressive monetary policy cannot solve all of these problems. Rather, it is that, by single-mindedly pursuing restraint, the Bank of Canada is not likely to be able to resolve *any* of them in a manner that is satisfactory, let alone sustainable.

Postscript

Since this paper was completed, Finance Minister Wilson has brought down his 1990 budget. If the deficit projections contained in that budget come to fruition, the imbalance in the macro policy mix will be rectified. However, the interest-rate assumptions underlying the forecasts appear overly optimistic. In particular, Eastern Europe's demands for capital will surely drive up real interest rates and complicate not only Canada's fiscal problems but its reliance on foreign capital as well.

A second comment is relevant. The freezing of Canada Assistance Plan (CAP) transfers to Ontario, British Columbia, and Alberta is, in effect, an exercise on the part of the federal government to conduct provincial stabilization policy. Setting aside whether the CAP is an appropriate instrument for this, I believe that Canada is now entering an era in which more emphasis will be placed on the role of provincial stabilization, preferably by the provinces. This is particularly the case, since, as the 1990 budget indicates, public-sector wage settlements are now running at 8.2 percent in British Columbia and 6.6 percent in Ontario. Fiscal stabilization, both federal and provincial, rather than a 550 basis-point premium on Canadian short-term interest rates, seems to be the appropriate instrument here.

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A Comment

Douglas D. Purvis

In the C.D. Howe Institute's volume, *Zero Inflation: The Goal of Price Stability*, I present what I think is a conventional, mainstream framework for analyzing the pursuit of monetary policy in a small, open economy. My conclusions provide strong, broad support for the recent policy stance of the Bank of Canada. The Bank's policies have, of course, been cast in terms of the medium-term goal of "price stability." It is a privilege and a challenge to have the opportunity to discuss the "alternatives" to this policy put forward by Tom Courchene and Pierre Fortin.

By virtue of his past positions on monetary policy, one might have expected Courchene to sign on to this policy. Yet, in typical Courchene fashion, he has presented us with a provocative and stimulating attack on the Bank's pursuit of price stability.

By virtue of his past positions, one might have expected Fortin to be an ardent opponent of the Bank's policy. Yet, his name is among the authors of *Zero Inflation*, and although those authors take no formal consensus position, Fortin appears surprisingly agreeable to the support of the Bank's policy offered there. However, in his contribution to the present study, Fortin reveals his substantial reservations about the policy, and presents typically constructive alternatives for improving the inflation-unemployment tradeoffs we face.

The Case for Pursuing Price Stability

The position I offer in *Zero Inflation* follows from two basic points:

> *Inflation is bad.*

Here, I rely primarily on the deeper discussions in Peter Howitt's excellent paper in *Zero Inflation.* I accept the uncertainty about what is the optimal level of inflation and, in particular, about whether it is greater than zero, but I take as given that the optimal level is below the 4 to 5.5 percent range that inflation has been within recently.

> *Monetary policy is particularly well suited for controlling the medium-term inflation rate, and not very well suited for influencing other economic variables.*

Here, I rely on the familiar argument pertaining to the inability of monetary policy to influence real variables in the medium term, and that its short-term influence on those variables is subject to long, variable, and inherently unpredictable lags.

From these two propositions, it is fairly easy to conclude that the appropriate goal for the Bank of Canada to set for itself is to reduce the underlying inflation rate in the economy. That seems to be what the Bank has been trying to do, and that is why I support it. From this perspective, whether targeting on zero inflation is appropriate and whether the Bank has been pursuing its goal with appropriate strength remain open and important but subsidiary questions.

Alternative Models for Monetary Policy

In the papers by Courchene and Fortin and elsewhere in this volume, challenges to my support for the Bank's policy arise from a number of points of departure from the reasoning set out above. That is, they arise from challenges to the core model I set out in *Zero Inflation.*

For Doug Peters, it is easy to identify the point of departure: he basically disagrees with the entire core model! His world is one in which the Bank can simply reduce interest rates permanently by fiat. Either he does not worry about the implications for the medium-term inflation rate — and must finesse the issue of the impact of increases in inflation on interest rates — or he believes that this can be accomplished with little or no impact on inflation. In such a world, the Bank can therefore reduce the federal deficit and the Department of Finance could then lower the price level (read inflation) by reducing indirect taxes. If Peters is right, his policy choices would surely be more palatable than those arising from the framework I set out in my paper. But one then must ask: Why only lower interest rates a couple of hundred basis points? Why not a thousand? Or, if the goal is to alleviate the federal government's debt-service burden, and the mechanism by which interest rates are to be lowered is by the Bank's buying government debt, why not simply instruct the Bank to purchase *all* the publicly held government debt? That would surely do the trick. Sadly, I think the answers to these questions are obvious.

For other critics, the rejection of my model is less complete. Let me focus on two key issues.

The Costs of Reducing Inflation

One issue that arose repeatedly at the C.D. Howe Institute workshop and that is given attention not only in Howitt's paper in *Zero Inflation* but also in the present, second-round, contribution by Fortin is that the conventional core model in my paper underestimates the costs that must be incurred in order to reduce inflation. The current buzzword in this regard is "hysteresis," but in fact one does not have to have hysteresis in the formal sense for this possibility to be taken seriously — if the unemployment that must be incurred is persistent enough, the costs are high enough. I have a number of brief reactions to this view.

First, the evidence underlying the core model is based on decades of evidence from a wide cross-section of countries. It is surprising that inflation remains so strong in the face of the apparent monetary restraint that Canada has experienced, and the evidence in support of hysteresis put forward by Howitt and Fortin is challenging. But I am personally loathe to throw out the evidence of such a rich variety of other experience in favor of the incompletely understood surprises of the past few years. I commend hysteresis to academic researchers, but I counsel skepticism to the policymakers.

There is an alternative explanation to the persistence of inflation — namely, that the economy has been experiencing a demand boom and, consequently, monetary policy has not been tight relative to the medium-term goal of disinflation. This explanation rescues the core model and its policy recommendations. Accordingly, let me pose my first question for subsequent discussion:

> *Was it possible to foresee that, following a period of a couple of years during which Canadian interest rates were held 250 to 400 basis points above those in the United States, the Canadian inflation rate would be rising? And if that had been foreseen, what would have been the implications for monetary policy: to loosen or to pursue the disinflation target more vigorously?*

Second, so far as I understand these hysteresis arguments, they present a case for pursuing disinflation gradually, not for abandoning the medium-term goal of reducing inflation. Further, and what is not widely recognized, they present a strong case for *resisting* any increases in inflation. If adverse shocks are allowed to cause the inflation rate to rise, then the economy is burdened with either the costs of allowing that higher inflation to continue or the costs of pursuing policies that cause it to fall. Thus, hysteresis arguments do not uniformly counsel in favor of an easier monetary policy.

Debt-Hangover Issues

A second issue, already alluded to in my reference to Peters above, is that the current size of public-sector deficits and accumulated public debt make the Bank of Canada's current policies unproductive in terms of its ultimate objectives, and counterproductive in terms of other developments in the economy. I concur completely with the view that current fiscal "problems" greatly complicate the task of monetary policy. I reject, however, the implicit or explicit policy recommendation that the Bank should therefore ease its stance and monetize a larger portion of the public-sector deficit than it does now. As I argue in *Zero Inflation*, the view that the role of the central bank is to facilitate the government's financing of its deficit is a recipe for financial instability. There are a number of other specific points I wish to make.

First, I support Courchene's concern about the twin deficits, but I would emphasize that the primary causal problem is the public-sector deficit, which has been with us for a number of years now. The recent emergence of a current-account deficit is a direct manifestation of the public-sector deficit, and while it may play the constructive role of focusing attention and galvanizing action, it is not in itself a signal of any new problem.

Second, while I appreciate the constructive spirit with which Fortin offers his "three c's" (credibility, controls, and consensus), I warn that controls may well run into the same kind of credibility problem that monetary loosening does if employed prior to fiscal correction.[1] While Fortin cites evidence of the efficiency of controls in lowering inflation, I submit that this evidence arises primarily from a period when controls were used as a complement to traditional demand management, and that evidence from other episodes when controls were used as a substitute for demand restraint gives a very different picture. If controls were invoked in a period when deficits remained at record levels — and, indeed, the inflation forecast implicit in interest rates remained high — the result would be social and labor-market unrest that would greatly raise the cost of any success in lowering inflation and seriously jeopardize the hope for any lasting disinflationary effect. It would, at best, be short-term pain for short-term gain — hardly a recipe for efficiency.[2]

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[1] I also wonder whether, in light of recent developments, Sweden is such an obvious model for the benefits of consensus, as Fortin suggests.

Third, I emphasize that Courchene, Fortin, and I — and many other commentators — all agree that the key macro policy problem in Canada has been that of an inappropriate mix. Excessive fiscal ease has caused too much of the burden for controlling inflation to be placed on the Bank of Canada. Fortin argues that the necessary fiscal correction has occurred; Courchene registers continuing concern about the size of current and projected deficits. I concur with Courchene in that concern, but he and I apparently differ on what the implications for monetary policy are. (I should point out that he takes issue with my interpretation of his position at this point.) I would argue that the appropriate stance of monetary policy is to continue to pursue its medium-term goal of price stability. Should fiscal correction occur, that goal would require a different monetary policy — in terms of interest rates and growth rates for monetary aggregates — but the goal itself would be unchanged. Courchene laments the combination of loose fiscal and tight monetary policy. But he seems unclear as to what he would propose monetary policy do in the face of persistent fiscal deficits except to oppose them; he does not like the current monetary policy but does not endorse the loose/loose policy mix either. This suggests a second question for subsequent discussion:

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[2] To be fair, as I note in *Zero Inflation*, Fortin has argued elsewhere that the fiscal problem has now been adequately dealt with and hence does not pose a threat to the medium-term viability of other proposals. I hope he is right.

> *Did the February 1990 federal budget achieve the fiscal correction necessary to create room for the Bank of Canada to maneuver?*

Fourth, I agree entirely with Courchene that provincial (read Ontario's) fiscal policies have aggravated the current macro situation in Canada, and that reconciling macro policies with regional imbalances invites more fiscal stabilization at the provincial level. One can reinforce this view from the self-interest of the regions and provinces themselves. Historically, provincial fiscal policies have often been procyclical, with expenditures following cyclically sensitive revenues quite closely. In most cases, stabilizing expenditures and allowing deficits to move cyclically would improve regional performance as well as mitigate the conflict between regional imbalances and macro stabilization at the federal level. However, it is also easy to overstate the importance of this. For most provinces, including Ontario, the import leakages are large enough to make the fiscal multipliers quite small.

Further Comments on Monetary Policy

One issue that perhaps did not receive sufficient emphasis either in *Zero Inflation* or in the C.D. Howe Institute workshop is the role of the exchange rate. My major criticism of the Bank of Canada's policy is that I fear that it sometimes puts too much emphasis on short-term movements in the exchange rate and, in so doing, takes its eye off the medium-term inflation ball. Early in 1990, it quickly reversed a 25 basis-point reduction in the Bank rate — apparently in response to the fairly dramatic exchange-rate reaction. This, I believe, has hurt the Bank's credibility and mired it in an even deeper unproductive market/expectations game with international speculators. If the fall in the interest rate was justified, the Bank would have been better in my view to stand its ground and not react to the speculators. One set of lessons we learned in the 1980s was that exchange rates apparently can depart from their "fundamental values" by significant amounts for extended periods of time (the misalignment problem), and that they often overreact to current events (the excess variability problem). For monetary policy to pay too much attention to short-term exchange-rate developments in such a world seems unwarranted.

In *Zero Inflation*, I suggest that the alternative to benign neglect of exchange-rate developments is to pursue a fixed exchange rate. In the present study, both Courchene and Fortin also raise the issue of a fixed exchange rate. I think this issue warrants more attention in the current debate than it has received, and therefore I suggest the following third question for subsequent discussion:

> *Does a fixed exchange rate offer an opportunity to continue the policy of disinflation while achieving reductions in interest rates and more balance in regional economic performance?*

Finally, I return to the issue implicit in the first question, above:

> *How tight is monetary policy in Canada?*

Do we take the evidence of recent pressures on the inflation rate to indicate that, relative to the goal of price stability, monetary policy has in fact been quite loose? Or do we take the focus on recent record interest-rate spreads to argue that monetary policy has been quite tight?

I would argue that the evidence is pretty clear that, for the period from mid-1987 through to the end of 1989, monetary policy was *not* tight in the sense of actively pursuing a goal of inflation reduction. Rather, the Bank was merely resisting any significant increases in inflation by "leaning against the wind" in the face of a surprisingly strong and surprisingly persistent demand boom. However, by 1990 the demand boom appeared to be waning (again), and monetary policy is now quite tight. The risk is that, by not wanting to repeat the January 1990 mistake of easing prematurely, the Bank will wait too long to let interest rates come down, and make the recession much worse than it need be. This risk is heightened by the Bank's declared intention of waiting to see natural declines in inflation before easing — given the lags in the effects of monetary policy, this may be too late.

Part V

Workshop Wrap-Up

In the final part, David Laidler pulls together the technical issues debated during an intense and provocative day-long workshop on zero inflation and shapes them into a framework for future public policy discussion.

Rapporteur's Comments

David Laidler

Introduction

I have already expressed my views on the Bank of Canada's zero-inflation target in this volume's predecessor, *Zero Inflation: The Goal of Price Stability*. In my judgment, the Bank is right to set this long-term goal, which, in practical terms, involves reducing the rate of change of the Consumer Price Index (CPI) to a zero to two percent per annum range and then keeping it there. I draw the reader's attention to this judgment now in order to warn that what follows is not the commentary of an uncommitted observer of the debate about Canadian monetary policy, but of someone already engaged on one side of it.

And yet, when all is said and done, disagreements about the proper design of economic policy, and its likely outcome, can never be settled with perfect certainty until after the event — and not always then. One's choice of side in this debate, as in any other, ultimately must rest on an element of personal judgment. Not everyone shares my favorable view of the Bank's goals, but there is no point here in simply repeating the arguments on which this view rests. Rather, I shall try to identify and explain the sources of disagreement among the contributors to this volume, in the hope that this will help readers to come to their own well-informed conclusions about the matter. As readers have already been warned, however, I shall not try to maintain any spuriously impartial stance as I do so.

The Benefits of Zero Inflation

Robert Lucas poses a serious challenge to the zero-inflation goal in his commentary on Peter Howitt's earlier study of its costs and benefits. Lucas is particularly skeptical of Howitt's estimates of the real economic benefits to be realized from stabilising the purchasing power of money. He claims, accurately enough, that, contrary to Howitt's assessment, "mainstream" academic opinion regards inflation's effects on real output and its rate of growth as minor, particularly when inflation is already confined to single digits, as it has been in Canada over the past few years. This "mainstream" opinion, however, is not unanimously held by all experts. Disagreements here reflect deep and long-standing divisions among economists about the appropriate theoretical framework within which monetary matters should be studied.

If it is to be useful, economic theory cannot be merely a description of the complex world we live in. It must simplify ruthlessly in order to highlight what is important, while entirely ignoring unessential details. For well over a century, economists have found it possible to shed light on the working of market mechanisms by bringing to bear on them a theoretical framework within which goods, services, and assets of all kinds are viewed as being traded "as if" by a system of frictionless barter. No one, of course, believes this assumption to be literally true. Everyone knows that, in fact, the functioning of markets is inextricably bound up with the monetary system. Nevertheless, it really does seem to be possible to ignore this considerable complication when analyzing a wide variety of problems without in the process being misled about their nature. Disagreement about just how wide is the variety of problems that can be addressed in this way underlies the different assessment of the benefits of zero inflation given by the literature that Lucas cites on the one hand, and that which underlies Howitt's analysis on the other.

The essence of Howitt's argument is that the cost of inflation arises because it undermines money's usefulness as a unit of account and means of exchange. Modern "mainstream" macroeconomics, however, is dominated by theoretical models that assume that the computations which the habit of using money as a common measure of value does so much to simplify are essentially costless; and that treat as negligible the market frictions which the use of money as a means of exchange does so much to overcome.[1] It is hard to see how any study of the costs of inflation informed by such a theoretical vision can come to any other conclusion than that they are small. If one starts with the preconception that the use of money confers small benefits at the best of times, then one cannot help but conclude that any damage which inflation might do to the monetary system must be minor.

If, on the other hand, one starts where Howitt does, with the preconception that the social productivity of the monetary system is high, then the disruption of that system by inflation is potentially a much more serious matter. It is because I share Howitt's vision of the social importance of the monetary system that I also take seriously his pessimistic assessment of the destructiveness of even single-digit inflation.[2] Nevertheless, Lucas is, as I remarked above, correct in arguing that this is a minority position when viewed from the perspective of modern academic macroeconomics, and he is surely justified in drawing the attention of nonacademic readers to this fact. Which side such readers will in turn take in the debate about the zero-inflation target must in part depend on the view that they take of the social productivity of the monetary system.

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[1] An excellent exposition of macroeconomics in this vein is Robert J. Barro, *Macroeconomics* (New York: Wiley, 1982). Similar material is presented, albeit as part of a more balanced exposition, in J.M. Parkin, *Modern Macroeconomics*, 2nd ed. (Toronto: Prentice-Hall Canada, 1987).

[2] I have developed the arguments involved here at considerable length in David Laidler, *Taking Money Seriously* (Oxford: Philip Allan; Cambridge, Mass.: MIT Press, 1990).

Lucas cites evidence on this issue, based on statistical comparisons of various countries' long-run growth and inflation performance. The evidence seems to show that there is essentially no relationship between the two variables. It should be treated with care, however. No one, not least Howitt, would argue that inflation is the only, or even the most important, factor affecting an economy's growth rate, and it is only too likely that inflation's effects are swamped by those of other factors in the type of comparison to which Lucas refers. And there is a little evidence on the other side, too. The growth performance of the Canadian economy in the 15 years after the Korean War was better than that of the 1980s — once one allows for the fact that our perception of the strength of the boom of the past few years has a great deal to do with the unusually depressed situation from which it began. Yet, those 15 years were a period of essentially zero inflation.[3] Moreover, the case for zero inflation does not rest on inflation's having effects on growth that are, in any absolute sense, large. They only need to be large *relative to the costs of reducing inflation* to make it worthwhile to do so.

The Costs of Reducing Inflation

Some of the contributors to this volume express doubts about the costs of reducing inflation, too — arguing that they might be higher than Howitt suggests. Everyone involved in the debate, with the exception of Douglas Peters, has framed his case in terms of a version of what Douglas Purvis called "the consensus model" of the interaction of inflation and employment. All concerned, including this author, agree that there are costs involved in *reducing* inflation, but assess their magnitude differently. Some, moreover, notably Fortin and William Scarth, seem to suggest that there are costs involved in *maintaining* low inflation, because of the possibility that the short-run inflation-unemployment tradeoff becomes less favorable at low rates of inflation. As Richard Lipsey explains, if this is the case, a low-inflation economy will tend to operate, on average, at a higher level of unemployment.

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[3] During those years, biases of the type that Pierre Fortin discusses in *Zero Inflation* accounted for perhaps 1½ percent per annum of measured inflation.

It is particularly hard to come to a definite conclusion about these issues. I have already pointed out that, during the 1950s and early 1960s, Canada experienced what amounted to zero inflation and maintained a level of employment and capacity utilization that anyone who has lived through the 1970s and 1980s can only envy. One could make similar comments about the performances of the U.S. and British economies, too. Nevertheless, a lot more than the inflation rate has changed over the past 40 years, and the only way to find out definitively how the economy would perform *now* with zero inflation is to try it. This conclusion is not too helpful; fortunately, the discussion contained in earlier essays enables us to say some constructive things about the matter.

The "consensus" model tells us that a key determinant of the unemployment costs of reducing inflation is the pace at which the market comes to anticipate lower inflation. "Anticipation" here involves both a psychological expectation that the inflation rate is likely to fall, and the capacity to act on that expectation. The proponents of that model, moreover, all stress the importance of the *credibility* of the stance of economic policy in affecting these matters. If the central bank makes clear announcements, and is believed, then it will affect expectations immediately. Agents in the private sector will then take steps to act on those expectations. The need for policy to be credible if monetary stability is to be maintained has long been recognized. It is an important theme of Walter Bagehot's *Lombard Street* (1873), which is still recognized as a landmark work in the development of our understanding of central bank behavior. Even so, in recent years the new-classical macroeconomics to which Lucas and Scarth refer — and particularly those aspects of it dealing with the theory of "rational expectations" — have given a new lease on life to the discussion of credibility, and one which is particularly relevant here.[4]

Until the mid-1970s, economists concerned with inflation took it more or less for granted that the principal way in which the private sector of the economy learned about the *intentions* of policymakers was by observing the *consequences* of policy. The hypothesis of "adaptive expectations" had it that agents learned from experience. It implied that anti-inflation policy would not affect expectations until it began to bear fruit, and, as a corollary, that its first impact was likely to be on output and employment. Only as a real slowdown had its effect on prices would the policy become credible and, hence, exercise a direct influence on the inflation rate. This view of expectations formation was surely too simple, and in due course it began to be superseded by the much more optimistic "rational expectations" doctrine, according to which the private sector would base its actions on its assessment of the *future* consequences of *current* policy, rather than on the *current* consequences of *past* policy.[5]

The acid test for this simple version of the rational expectations idea came in the early 1980s. In Canada, but also in Britain and the United States, it was widely understood that the monetary authorities were putting in place a tight money policy. Agents who understood this and also that it would lead to a lower inflation rate should, therefore, have altered their wage and price behavior in anticipation of the policy's effects, thereby helping to bring about a slowdown in inflation with little or no real economic disruption. In the event, inflation was dramatically reduced, but only at the cost of a recession that, in Canada's case, was the worst since the 1930s. The lesson that economists learned from this episode was not to take for granted the credibility of policy, or the private sector's capacity to act in anticipation of its effects. It is now uncontroversial that the more credible is the Bank of Canada's policy stance, the less costly will be the achievement of zero inflation. The disagreement that is so evident in many of the essays in this study concerns not this theoretical point, but the practical question of assessing just how credible the Bank is.

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[4] A ready source of material on the new-classical approach to macroeconomic analysis is Barro, *Macroeconomics*.

[5] The seminal paper applying the rational expectations idea to macrostabilization policy is T.J. Sargent and N. Wallace, "Rational Expectations and the Theory of Economic Policy," *Journal of Monetary Economics* 2 (May 1976): 169–183.

Howitt, Purvis, and even the Bank's own Paul Jenkins are sufficiently concerned about credibility to advocate a gradualist approach to attaining the zero-inflation goal, rather than risking a repeat of the early 1980s by trying to move too quickly. Their critics — particularly Scarth, Fortin, and Tom Courchene[6] — are simply more pessimistic about this matter, and their pessimism leads them to believe that the costs of reducing inflation to zero are too high to be worth incurring. Once more, the issue calls for judgment, and once more it is my task to outline the issues on which that judgment must hinge. These involve the current stance of fiscal policy and the mechanisms through which the Bank is currently implementing its policies. As will become apparent, I believe that there are real causes for concern here, particularly about the second set of issues.

The Monetary-Fiscal Policy Mix

Monetary policy works to reduce inflation by downward pressure on the level of aggregate demand in the economy. Fiscal policy, too, affects the level of aggregate demand. Expansionary fiscal policy, such as is still currently in place at both the federal and, as Courchene in particular stresses, provincial levels, works against monetary policy, both directly and indirectly. Its direct effect is, obviously enough, to increase the stresses that monetary policy puts on those sectors of the economy that are particularly sensitive to interest-rate and exchange-rate fluctuations. Indirectly, an expansionary fiscal policy undermines the Bank of Canada's credibility. The Bank is, after all, ultimately subservient to the Minister of Finance, who acts on behalf of Parliament; if fiscal policy, for which the minister is also responsible, appears to be on a different track to monetary policy, why should we not expect monetary policy to fall into line in due course?

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[6] Another critic, whose paper on this topic was circulated at the C.D. Howe Institute workshop but unfortunately could not be included in this volume, is David Johnson, "An Evaluation of the Bank of Canada's Zero-Inflation Target: Do Michael Wilson and John Crow Agree? (Wilfred Laurier University, Waterloo, Ont., 1990, Mimeographed).

There is no disagreement among the contributors to this volume that the current policy mix is wrong, or that the Bank's pursuit of zero inflation would be made easier and more credible if fiscal policy were a good deal tighter. There are, though, differences of opinion about what this should imply for monetary policy. These seem to hinge on different judgments about how the policymaking process operates. Those who believe that the Bank should ease up take one view of the way in which monetary and fiscal policies interact in their formation. Their opponents, such as myself, interpret the sources of tension between monetary and fiscal policy differently.

The typical economic textbook account of these matters has government expenditure and taxation decisions taken by a "fiscal authority". If that authority and the central bank are seen to be pursuing inconsistent policies, then the ultimate outcome is pictured as depending on the balance of political power between the two. Applied to Canada, this model naturally leads to the conclusion that the stance of fiscal policy is the political given, and that monetary policy will ultimately be brought into line with it. It further leads to the view that the zero-inflation target is not credible, and that the sooner monetary policy is relaxed a little the better. The logic of this argument is impeccable. If it is to be challenged, it has to be on the basis of its premises, because once these are granted, so must be the conclusions.

What is dubious here in the eyes of the supporters of the zero-inflation target is the assumption that fiscal policy is made by a monolithic "authority". They prefer to interpret expenditure and taxation policies as the outcome of a complex political process, the prominent features of which include conflict between the Minister of Finance and his cabinet colleagues from the spending ministries and strong popular pressure toward lower taxes focused by both the opposition and the government's own back benches. Looked at in this way, monetary policy tied to an explicit zero-inflation target appears to be a factor helping to discipline fiscal policy. The supporters of that target do not believe that fiscal policy would remain unchanged if the Bank of Canada were to give up the target. Rather, they fear that a relaxation of monetary policy would lead to an even less disciplined fiscal stance than we now have. If they are right about this, then settling for the current inflation rate is not viable. The extra fiscal profligacy that such a choice of target would provoke would push the economy inexorably toward accelerating inflation.

Here, as elsewhere in the debate about zero inflation, there is no way to come to a definite conclusion in the absence of an experiment; and the experiment in question is not one that supporters of the Bank's policy would want to see conducted. Here too, then, readers are invited to exercise their own judgment on the issues that are at stake.

The Money Supply as a Policy Indicator

It is not just the stance of fiscal policy that creates difficulties for the credibility of the Bank of Canada's zero-inflation target. The means currently being used to carry out monetary policy itself are themselves a source of confusion. As Courchene pointed out during his oral presentation to the C.D. Howe

Institute's workshop, although the Bank has been admirably clear about stating its policy goals, it has failed to provide information about what variable the public ought to observe in order to assure itself that policy is indeed on track. To put matters in the jargon of academic monetary economics, policy is aimed at a clearly defined "target" variable, but lacks an "indicator" variable whose current behavior can be monitored by anyone interested in assessing the likelihood that the target will indeed be reached. This failing of monetary policy is bound to affect its credibility for the worse, and gives grounds for real concern.

The source of the problem is identified by Peters, who correctly points out the similarity of the Bank's current policy stance to that which derived from the monetarism of the 1970s. The policy targets are very much the same — lower inflation — but the monetarism of the 1970s also provided an indicator variable —namely, the growth rate of the quantity of money. It was believed then that this growth rate, relative to that of output, was the principal determinant of inflation in the long run, so that its current behavior could be interpreted as giving a clear and early signal of where the inflation rate was likely to move. Nowadays, the popular perception is that money growth is not a reliable indicator of policy because the economy's demand-for-money function has become unstable. That popular perception, however, is almost certainly wrong, as I shall now explain.

When economists investigate the interactions of money, interest rates, output, and prices, they usually use quarterly and, indeed, sometimes monthly, data on the relevant variables. These interactions have been extremely complicated over the past 15 or 20 years, because of the fluctuations that economies have experienced, so much so that their complexity for a while ran ahead of the capacity of existing techniques of statistical analysis to cope with it. Previously well established empirical relationships seemed to disappear when data from the 1970s and 1980s were brought into the picture. Statistical technique, however, has not stood still. It is now beginning to look as though what was widely thought to be a failure of the monetarist hypothesis of a stable demand-for-money function was in fact a failure of statistical techniques to uncover its persistence during a period of particularly marked economic fluctuations. As more powerful techniques of analysis are brought to bear on the data, the relationships that many thought had vanished are beginning to re-emerge.[7]

One must be careful here, though. The stability under discussion has to do with the relationship that rules between money growth and inflation on average, over periods of two or three years. It is not apparent on a quarter-by-quarter or even a year-by-year basis. It is, moreover, subject to disturbance by institutional changes whose effects are easy enough to allow for after the fact, but are far harder to cope with while they are happening. Nevertheless, as a practical matter, here and now in Canada, it does seem to be the case that, if a rate of change of the CPI in the zero to 2 percent range is to be achieved and sustained, then M1 growth should be held below 3 percent and M2 growth to somewhere around 5 percent.

This conclusion immediately points to two problems with the current stance of monetary policy. First, although the instability of the later 1970s and 1980s did not destroy money growth's usefulness as an indicator of policy, it certainly undermined the Bank's capacity to control it; and second, M1 and M2 are currently giving mixed signals. I shall deal with the first of these problems here, reserving discussion of the second until the next section of this paper.

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[7] A representative collection of papers dealing with this issue (among others), and using data for a number of countries, including Canada, was presented at a conference entitled "Understanding Velocity, New Approaches and Their Policy Implications" at the Federal Reserve Bank of Cleveland in September 1989. The papers will appear in a special issue of the *Journal of Policy Modeling*, edited by David Laidler, during 1990.

I referred above to the use of quarterly data to study the interaction of money, output, interest rates, and prices, and noted that, until the mid-1970s, it seemed to be possible to summarize these interactions in terms of a rather simple statistical relationship, usually called a "short-run demand-for-money function."[8] This relationship lay at the heart of the Bank's experiment with "gradualism" in the late 1970s, for it provided the foundation of the Bank's technique for controlling the money growth rate. To simplify the Bank's procedure only slightly: current output and prices were estimated; a target value for the money supply (M1) was chosen; and the "short-run demand function" was then used to calculate a value for the rate of interest that would ensure that this target was hit; and the Bank then set this value for the rate of interest.

The "short-run demand-for-money function" on which this technique of controlling money growth relied became unstable at the turn of the decade, and so it ceased to be viable. The recent statistical work alluded to earlier, which has re-established money growth as a viable indicator of monetary policy, has failed to re-establish the existence of a stable "short-run demand-for-money function," and the Bank has not succeeded in developing some alternative simple method for controlling money growth. A decade ago, Howitt and I criticized the Bank's operating procedure for failing to take account of the influence of interest rates on the demand for commercial bank credit and, hence, on the behavior of the deposit liabilities that are created as a by-product of the chartered banks' response to the public's demand for credit.[9] We still believe that a neglect of this crucial aspect of financial-market behavior lay at the root of the collapse of the "short-run demand-for-money function," and continues to create difficulties for the Bank in the implementation of monetary policy.

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[8] I use quotation marks here to indicate my skepticism that the statistical relationship to which I refer is indeed a demand function for money. The reasons for my skepticism are explained in Laidler, *Taking Money Seriously*, chapters 2 and 5.

[9] See Peter Howitt and David Laidler, "Recent Canadian Monetary Policy — A Critique," in *Issues in Canadian Public Policy II*, edited by Ronald Wirick and Douglas Purvis (Queens University, Kingston, Ont., 1979, Mimeographed).

Be that as it may, because the Bank does not have a reliable monetary control mechanism in place, it is difficult indeed to judge whether or not its current actions are compatible with a gradual approach to zero inflation. The doubts that this raises about the credibility of monetary policy are surely well founded, but it is important to note that they would be present whatever the Bank's stated intentions. Those doubts do not, therefore, give grounds for preferring some policy goal other than that of zero inflation.

The Current Stance of Policy

The fact that monetary policy in Canada lacks a widely accepted indicator makes its current stance difficult to read, and yet the contributors to this volume have said so much about where we now are, and what should be done about it, that a credible rapporteur cannot avoid addressing these issues. I shall begin with a brief discussion of the inflation rate itself, and then consider the behavior of the monetary aggregates. Finally, I shall say something about the levels of interest rates and the exchange rate.[10]

Assessing the inflation rate is always difficult. The most commonly used indicator of price change — namely, the year-on-year percentage change in the CPI — abstracts from seasonal fluctuations and is measured over a sufficiently long period that the effects of all manner of specific shocks are averaged out of it. The trouble is that this indicator tells us what has happened over a time interval whose midpoint is six months in the past. Hence, it detects changes in the inflation rate with a significant time lag. More up-to-date information is available in the form of quarterly inflation rates — either for the CPI or for the more broadly based gross domestic product (GDP) deflator — but timeliness is bought at the price of reliability, both because no seasonal adjustment process is perfect and because the shorter the time period the more open are the data to distortion by special events.

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[10] For a more extended discussion, see David Laidler and William Robson, *Mainly Money: The Cause of Canadian Inflation*, Inflation Monitor 4 (Toronto: C.D. Howe Institute, 1990).

That being said, I am less confident than Peters that the year-on-year inflation figure of more than 5 percent exaggerates what is now happening. Inflation did turn down in the final quarter of 1989 as the shorter period measures suggest, but the modest improvement then achieved has not been sustained into 1990.

Furthermore, M1 growth usually leads the inflation rate by up to two years — with a rather wide margin of error on either side of this average lag — and it did fall markedly around the end of 1988. Thus, early in 1990 is too soon to expect a sustained fall in inflation. The behavior of M2, still growing year over year at low double-digit rates, tends to support this conclusion. The Bank of Canada believes that M2 growth currently overstates the looseness of monetary policy because of the effects of the shrinking number of Canada Savings Bonds held by the private sector on the demand for some of the less liquid types of savings accounts included in that aggregate. But even if we allow for this, M2 does not signal an imminent fall in inflation.

If I doubt Peters' view about where we are *vis-à-vis* inflation, I emphatically do not share his view, also voiced less urgently by Courchene, that the Bank should now take steps to drive interest rates down — for two reasons.

First, I believe that Canadian interest rates are by and large set on international capital markets under the influence of the worldwide level of real interest rates and market participants' expectations about the likely future course of Canadian inflation, and that the Bank's room for maneuver within the limits laid down by these forces is very narrow.

Second, I do not see how the Bank could lower interest rates in the absence of a fall in the market's inflation expectations without acting as a buyer of Treasury bills. I also do not see how such action could fail to increase money growth and have an adverse effect on inflation both expected and, ultimately, realized. I therefore believe that such actions would undermine the Bank's pursuit of a zero-inflation target.

Even so, I am nevertheless concerned about the amount of attention the Bank appears to be paying to the exchange rate when it exercises what limited power it has over the level of interest rates. If some agents believed — rightly or wrongly is beside the point — that inflation was becoming lower during the past few months, then there was a good market-related reason for interest rates to fall a little at the beginning of 1990, and there was every reason to expect a modest decline in the exchange rate to accompany this development. The exchange rate is more flexible than domestic wages and prices and hence tends to "overshoot" in an upward direction when monetary policy is tightened up.[11] One would expect a downward readjustment to accompany the slowing of inflation that ultimately results from such tightening. To resist it when it occurs is to run the risk of inadvertently tightening monetary policy too much. If the Bank is serious about achieving zero inflation, then the time will certainly come when interest rates will fall. When that happens, there will be downward pressure on the exchange rate. I would feel more comfortable about monetary policy were I more confident that the Bank is ready to be guided by the behavior of the monetary aggregates and will, at such a time, let market forces drive the behavior of interest rates and the exchange rate.

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[11] The phenomenon of "exchange-rate overshooting" referred to here is carefully analyzed in Rudiger Dornbusch, "Expectations and Exchange Rate Dynamics," *Journal of Political Economy* 84 (December 1976): 1161–1176.

It will be apparent that, uncomfortable though I am about some details of the current conduct of monetary policy, I am even more uncomfortable about Courchene's flirtation with the idea of pegging the exchange rate on the U.S. dollar — in effect, letting the Federal Reserve System run Canadian monetary policy. No one is really sure how the implementation of the Free Trade Agreement is going to affect the structure of trade between Canada and the United States, nor does anyone have the faintest idea how it is going to affect the pattern of capital flows coming in and out of Canada. In the absence of such knowledge, it seems to me that prudence dictates the maintenance of a flexible exchange rate as a useful device for absorbing unexpected shocks coming from these sources. Moreover, the very fact that the exchange rate is likely to be subject to such shocks provides yet another reason why the Bank of Canada should be careful indeed about giving that variable any significance at all for the conduct of monetary policy.

Concluding Comment

I have tried to show that much of the disagreement among economists about the desirability and feasibility of pursuing zero inflation as a target for monetary policy stems from deeper disagreements about the appropriate way to think about how the economy, not to mention the political process, works. Though I have undoubtedly weighted the exposition toward my own view of the issues in question, I hope that I have not done so to the point of obscuring the arguments of my opponents. I hope also that my own general support of the Bank of Canada's position does not appear to be unduly uncritical. There are questions here about which reasonable people can disagree, and there are aspects of the current conduct of policy that give grounds for concern.

And it is also important to realize that the matters over which the contributors to this volume disagree are, relatively speaking, minor. Some of us would like to see inflation pushed into the zero to 2 percent range; others would prefer it if inflation were held to around 4 percent; and some of the latter would probably rethink matters if fiscal policy could be brought better under control. Relative to where inflation was in the early 1980s, and relative to where a more relaxed monetary policy could so easily take it now, the range of disagreement is remarkably small. If there is not a consensus in favor of zero among the contributors to this volume, then there surely is something very close to one in favor of low inflation and, indeed, in favor of inflation lower than that experienced during 1989. Though the details of the Bank of Canada's policies do not get unequivocal support from the contributors to this volume, the Bank's overall concern with inflation and belief in the potential of inflation to damage the economy do seem to command wide agreement. We should not lose sight of this important fact as we debate the details of policy.

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TAKING AIM:

The Debate on Zero Inflation,

Edited by Robert C. York

The Governor of the Bank of Canada, John Crow, has set his sights on a zero-inflation target and while Canadians may not agree with this policy, or even know about it, they are feeling its effects through high interest rates. In this study, a follow-up to ***Zero Inflation: The Goal of Price Stability***, published by the C.D. Howe Institute in April 1990, several leading economic commentators take aim at the Governor's goal. Critics of the zero-inflation policy say that, while they agree with the aim of reducing inflation, the cost of going all the way to zero may be too high.

Robert C. York, the editor of ***Taking Aim***, is a Senior Policy Analyst at the C.D. Howe Institute. He is the co-author of ***Evaluating the Free Trade Deal: A Guided Tour through the Canada–U.S. Agreement*** (1988); and ***Ottawa's Next Agenda*** (1989).

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